Deep eutectic solvents as a stabilising medium for NAD coenzyme: Unravelling the mechanism behind coenzyme stabilisation effect

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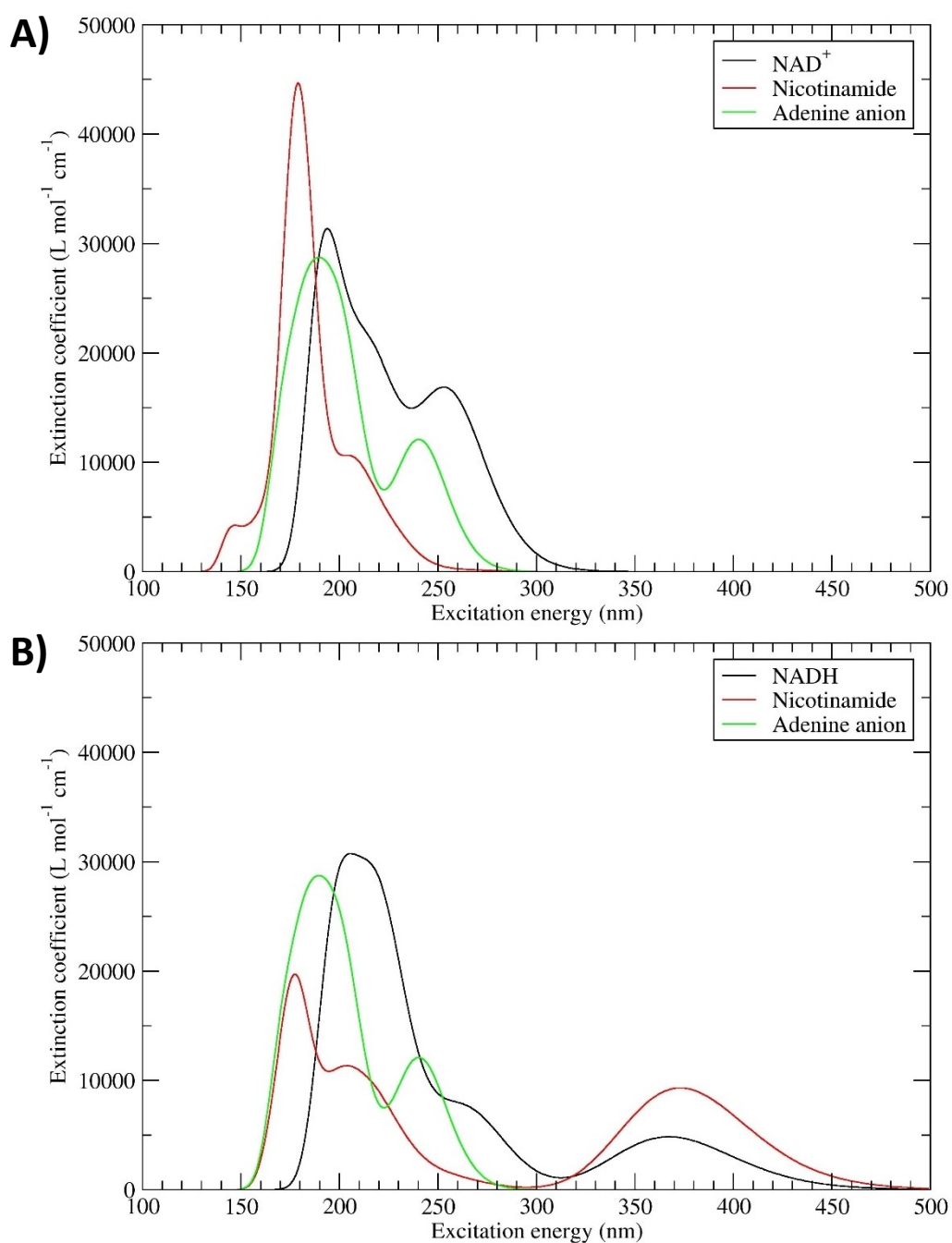[a]University of Zagreb, Faculty of Food Technology and Biotechnology

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SUPPORTING INFORMATION

Figure S1 Calculated UV-Vis absorption spectra for A) NAD$^+$ and B) NADH coenzymes in the aqueous solution (in black) using the TD–DFT approach and the (SMD)/M06–2X/6–31+G(d) level of theory. Each display also contains the corresponding UV-Vis spectra for their constituting fragments that are liberated following the cleavage of the matching N–C(ribose) bond during degradation, as discussed in the text. Both graphs show that the adenine unit is responsible for the experimentally observed transition at 260 nm, while the reduced neutral form of the nicotinamide moiety is responsible for the absorption at 340 nm, thereby only visible in the UV-Vis spectra of NADH. Upon its oxidation to the cationic form present in NAD$^+$, the absorption at 340 nm is diminished and not visible when the UV-Vis spectrum of the former coenzyme is recorded.
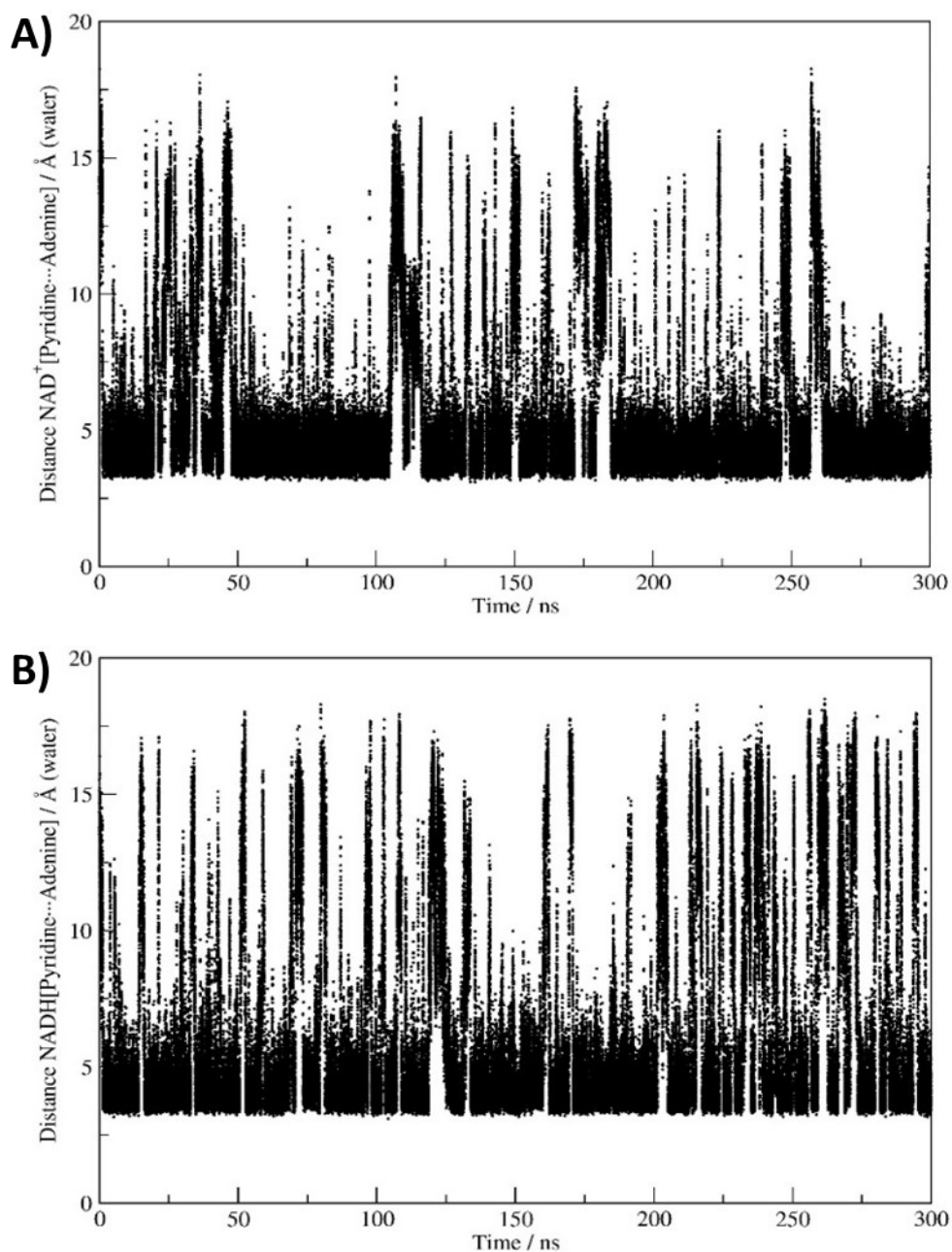
Figure S2 Evolution of distances between centers of mass among pyridine and adenine aromatic rings in A) NAD$^+$ and B) NADH during 300 ns of MD simulations. The inspected distances were found below 5 Å during 66% and 62% of the simulation times, respectively, thereby indicating the predominance of the hydrophobic π···π stacking interactions.
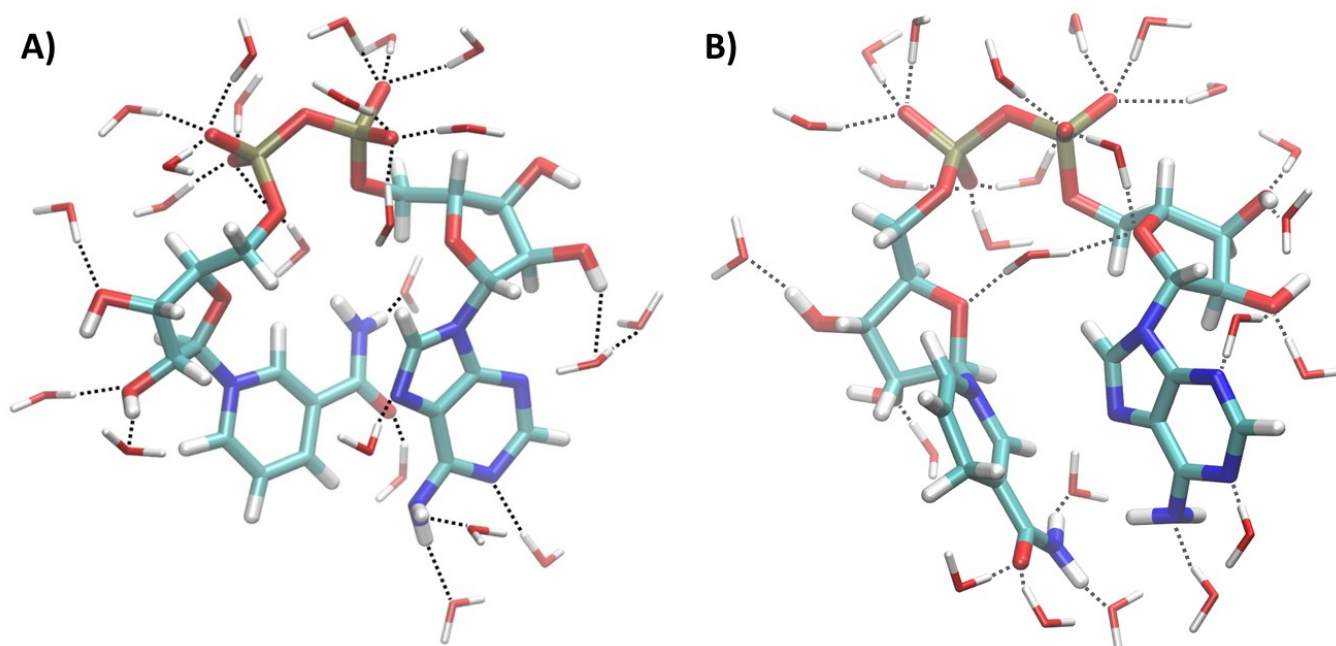
Figure S3 Representative structures of A) NAD$^+$ and B) NADH with the first solvation sphere of water molecules in pure aqueous solution, as obtained through MD simulations.

Table S1 The number of solvent molecules in the first solvation shell of the NAD⁺ phosphodiester group located within 3 Å during 300 ns of MD simulations. For pure water, each display pertains to one of the phosphate O-atoms colored in blue, while for both DES solutions, each display combines all phosphate O-atoms in a single picture corresponding to a particular solvent component. In pure water, typically three water molecules optimally solvate each phosphate oxygen, while, in both DES solutions, the number of water molecules is smaller and the phosphate solvation is overtaken by other components.

COENZYME: NAD⁺

Pure water

ChCl:Gly solution

water

choline

glycerol

ChCl:U solution

water

choline

urea
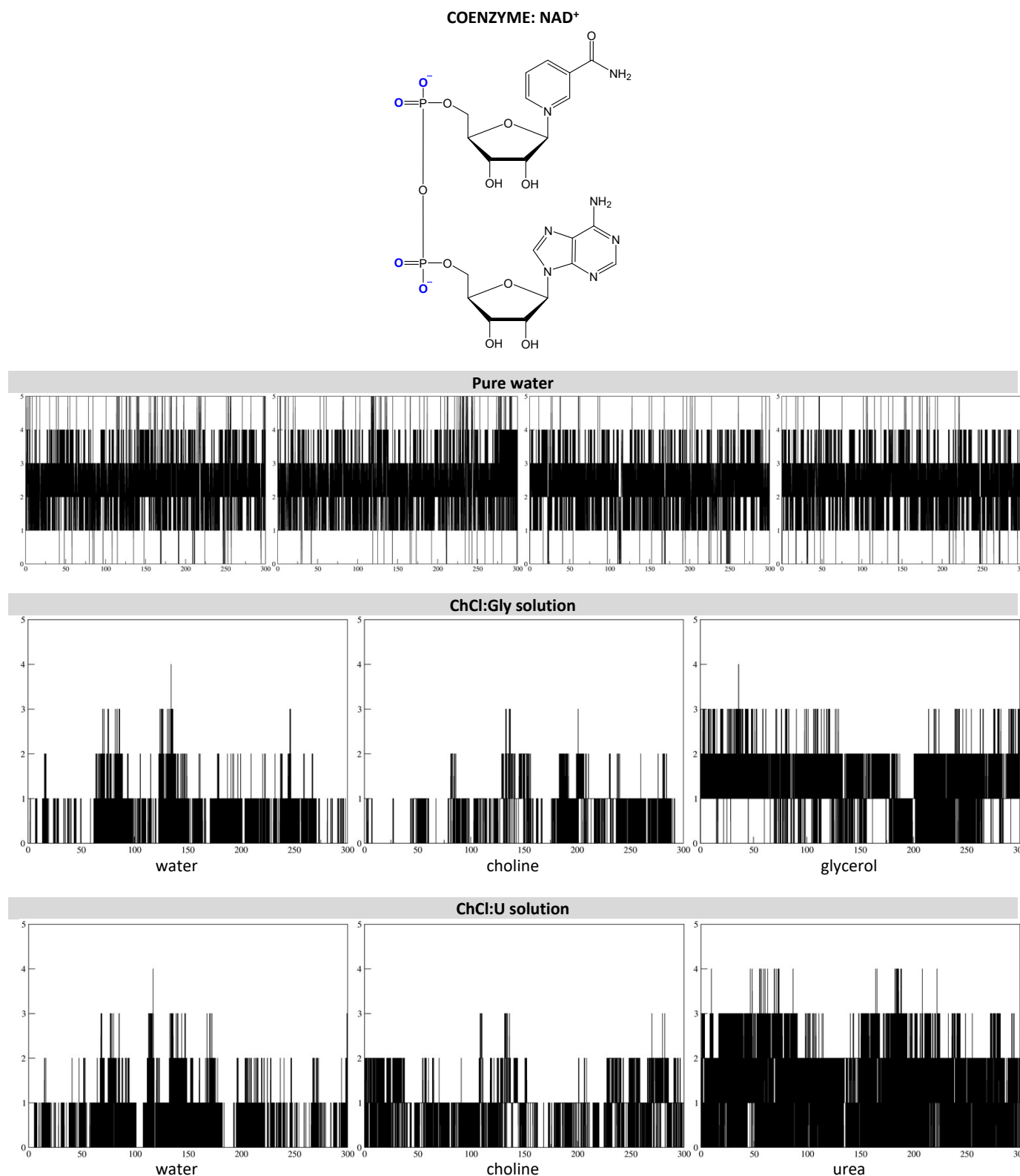
Table S2 The number of solvent molecules in the first solvation shell of the NADH phosphodiester group located within 3 Å during 300 ns of MD simulations. For pure water, each display pertains to one of the phosphate O-atoms colored in blue, while for both DES solutions, each display combines all phosphate O-atoms in a single picture corresponding to a particular solvent component. In pure water, typically three water molecules optimally solvate each phosphate oxygen, while, in both DES solutions, the number of water molecules is smaller and the phosphate solvation is overtaken by other components.

COENZYME: NADH

Pure water

ChCl:Gly solution

water   choline   glycerol

ChCl:U solution

water   choline   urea

NAD⁺

NADH

Representative structure #1 (occurrence = 50%)

Representative structure #2 (occurrence = 34%)
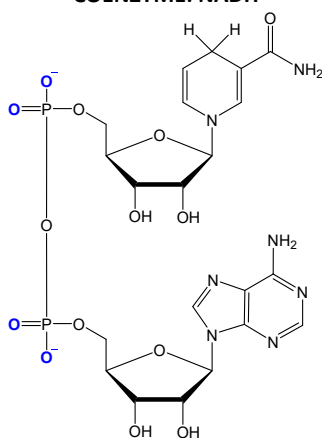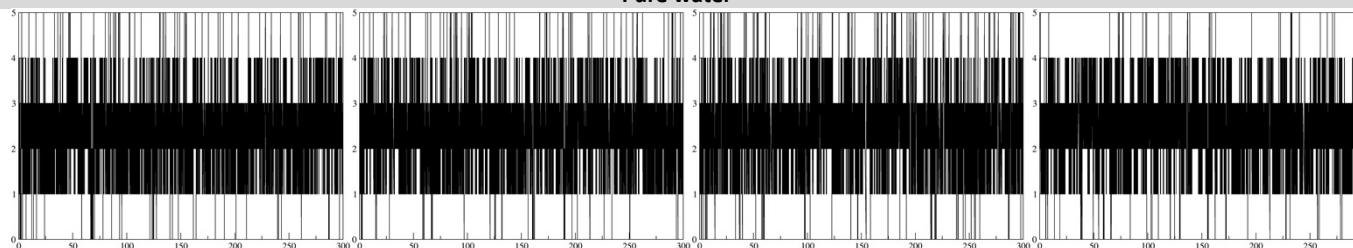
Representative structure #1 (occurrence = 79%)
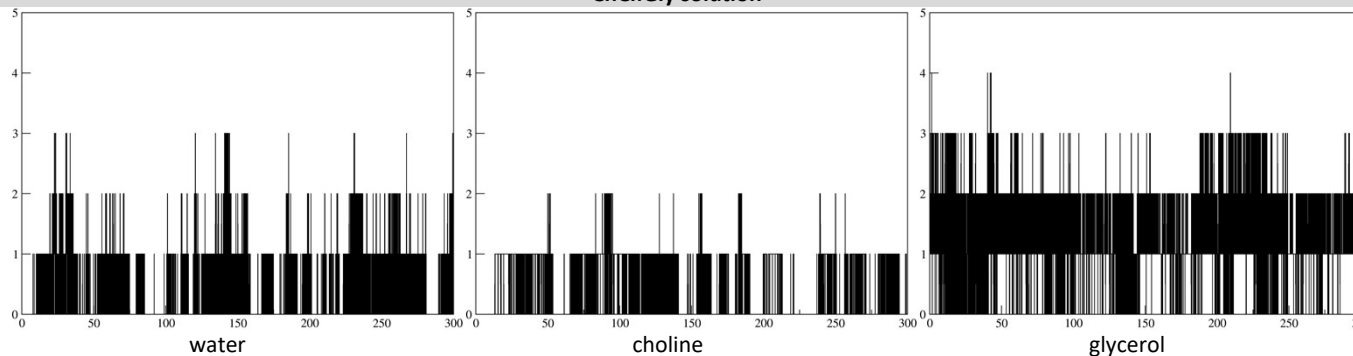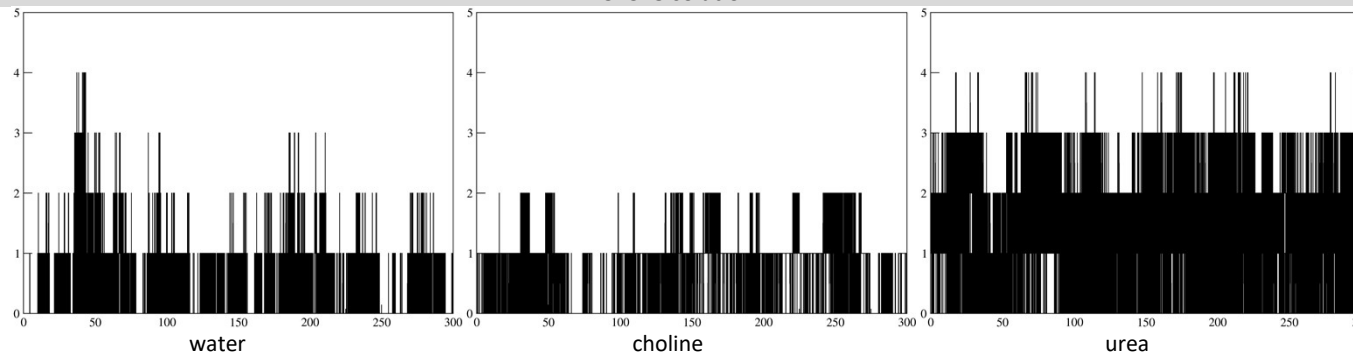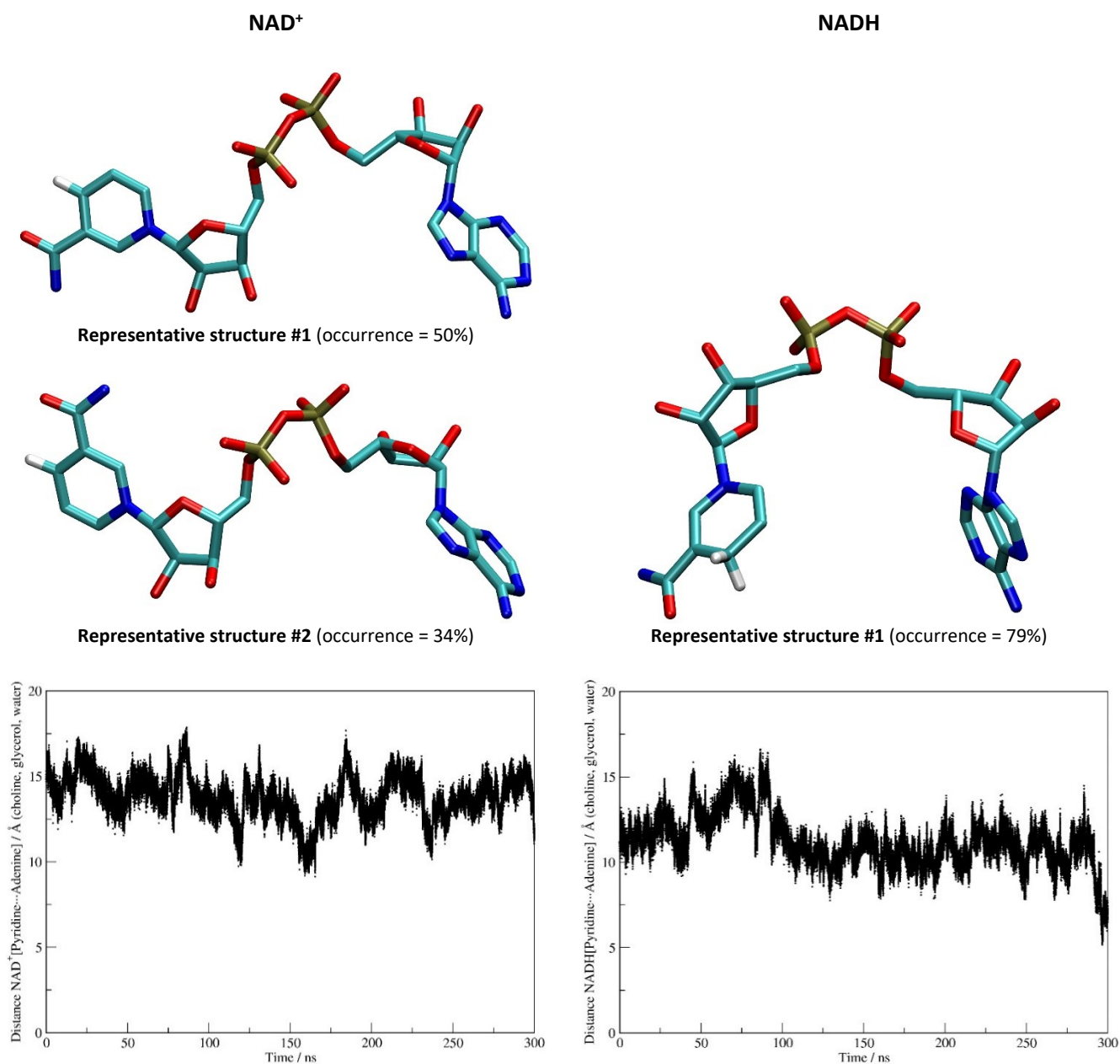
Figure S4 Representative structures for NAD⁺ and NADH in ChCl:Gly following MD simulations. For NAD⁺, two clusters are identified that differ in the orientation of the nicotinamide unit relative to the rotation around the N–C bond connecting it to the ribose fragment. Distance between centers of mass among pyridine and adenine rings (bottom) indicates no hydrophobic π···π stacking interactions at any point during simulations.

NAD⁺

Representative structure #1 (occurrence = 91%)

NADH

Representative structure #1 (occurrence = 62%)
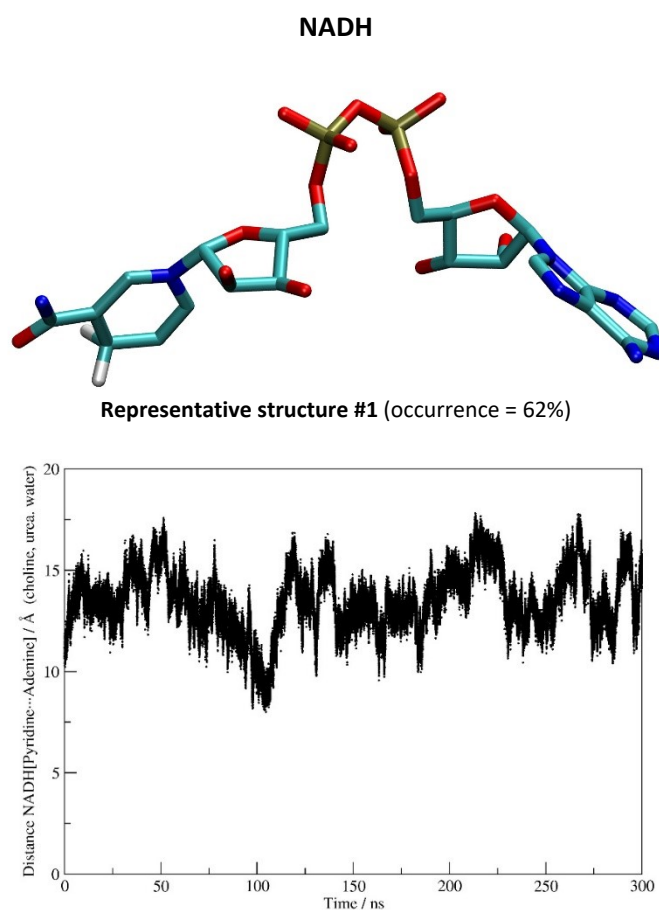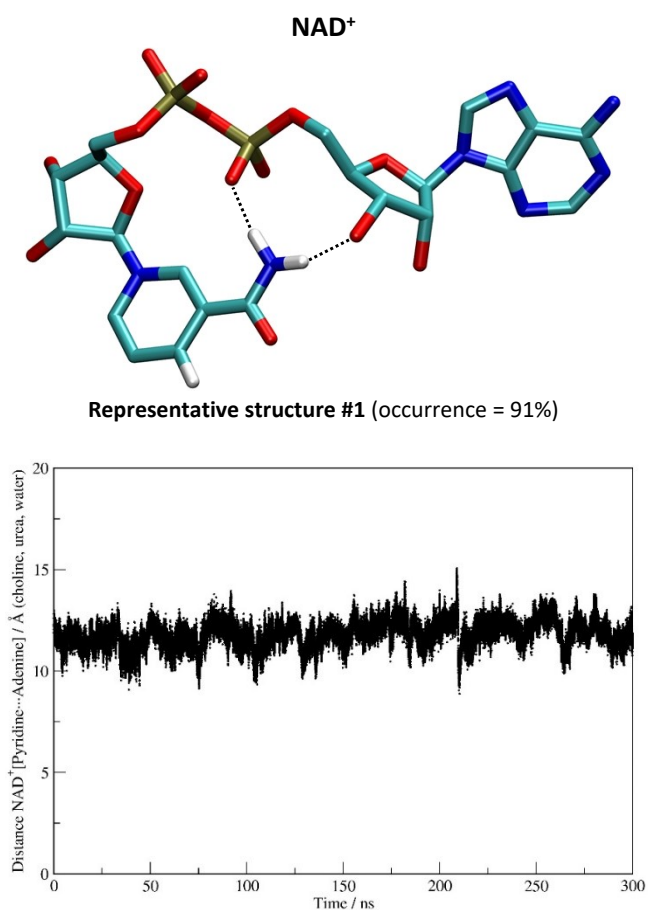
Figure S5 Representative structures for NAD⁺ and NADH in ChCl:U following MD simulations. Distance between centers of mass among pyridine and adenine rings (bottom) indicates no hydrophobic π···π stacking interactions at any point during simulations.

Table S3 The actual number of hydrogen bonding contacts among 150.000 structures obtained during 300 ns of molecular dynamics simulations in all three investigated environments.

		Nicotinamide	Nicotinamide ribose	Phosphodiester	Adenine	Adenine ribose	TOTAL
NAD⁺ coenzyme	**WATER**						
	Water	227.488	296.186	1.279.960	243.342	314.883	2.361.859
	TOTAL	**227.488**	**296.186**	**1.279.960**	**243.342**	**314.883**	**2.361.859**
	CHOLINE–GLYCEROL–WATER						
	Water	54.107	44.674	44.024	39.175	48.458	230.438
	Choline	3.939	2.665	76.457	5.748	4.820	93.629
	Glycerol	88.970	112.705	930.896	69.059	107.434	1.309.064
	TOTAL	**147.016**	**160.044**	**1.051.377**	**113.982**	**160.712**	**1.633.131**
	CHOLINE–UREA–WATER						
	Water	41.429	95.997	140.069	48.869	75.012	401.376
	Choline	1.764	4.874	136.509	6.373	5.618	155.138
	Urea	58.980	88.894	907.326	87.271	92.950	1.235.421
	TOTAL	**102.173**	**189.765**	**1.183.904**	**142.513**	**173.580**	**1.791.935**

		Nicotinamide	Nicotinamide ribose	Phosphodiester	Adenine	Adenine ribose	TOTAL
NADH coenzyme	**WATER**						
	Water	280.184	381.343	1.308.347	214.656	347.975	2.532.505
	TOTAL	**280.184**	**381.343**	**1.308.347**	**214.656**	**347.975**	**2.532.505**
	CHOLINE–GLYCEROL–WATER						
	Water	95.571	110.600	71.999	49.285	59.552	387.007
	Choline	13.918	7.485	53.938	5.370	9.802	90.513
	Glycerol	148.913	121.104	1.091.592	81.841	122.697	1.566.147
	TOTAL	**258.402**	**239.189**	**1.217.529**	**136.496**	**192.051**	**2.043.667**
	CHOLINE–UREA–WATER						
	Water	87.377	100.531	186.444	57.704	87.572	519.628
	Choline	12.487	11.896	206.453	7.724	7.542	246.102
	Urea	145.471	135.708	774.894	79.566	103.904	1.239.543
	TOTAL	**245.335**	**248.135**	**1.167.791**	**144.994**	**199.018**	**2.005.273**
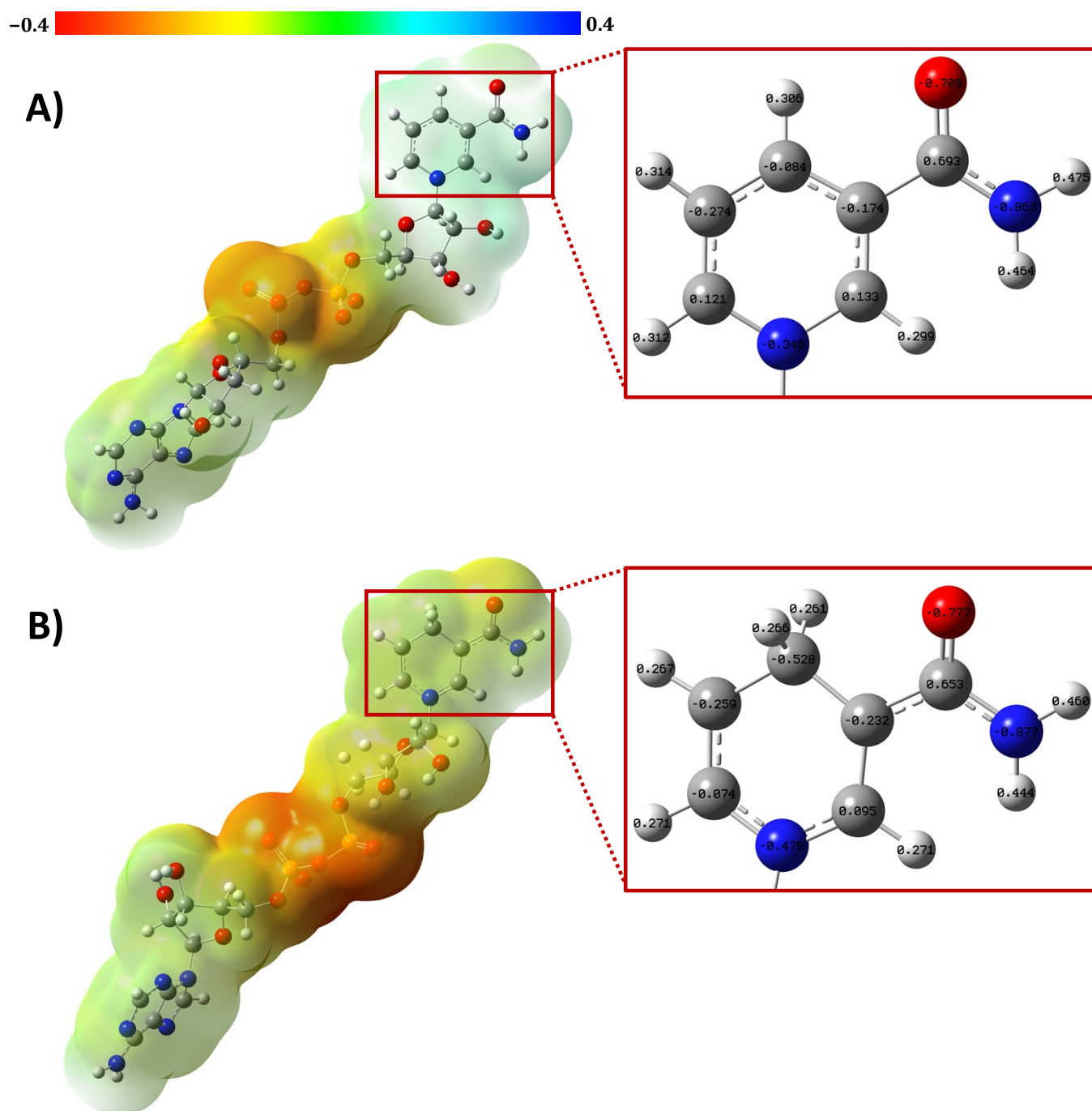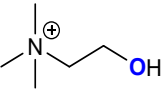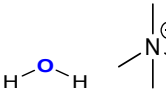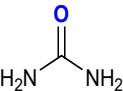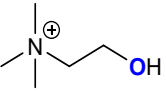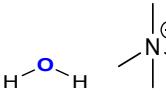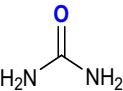
Figure S6 Distribution of the electronic density around the surface of A) NAD$^+$ and B) NADH coenzymes, showing the accumulation of the negative charge around phosphate units in both cases, while a comparable total electronic density within the matching nicotinamide fragments, despite an excess positive charge in NAD$^+$. This is further confirmed in the inset displays, which show the NBO atomic charges within the nicotinamide fragment, thereby revealing a pronounced delocalization of an excess positive charge in NAD$^+$ within its six-membered nicotinamide ring, which justifies its reduced effect on the solvation relative to the NADH coenzyme.
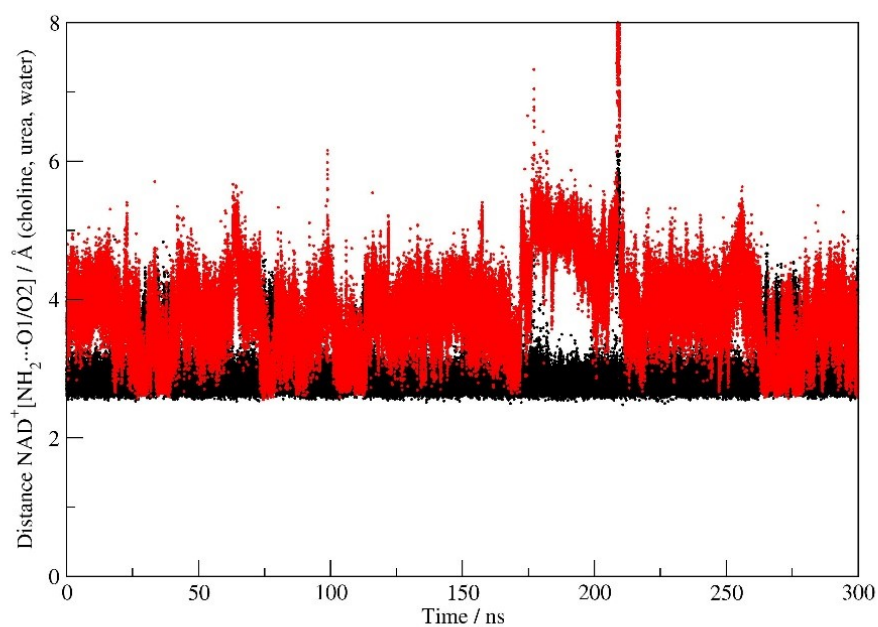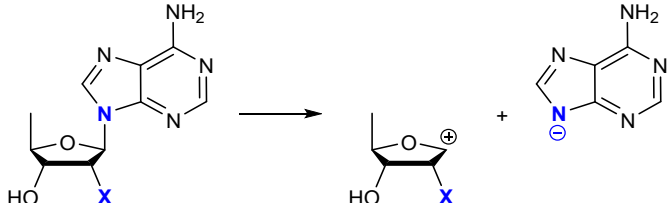
Figure S7 Evolution of distances between the nicotinamide amide N–H and both O-atoms (in black and red) from the nearest PO_2^- phosphate unit in NAD$^+$ occurring in ChCl:U during 300 ns of MD simulations. The graph indicates an almost persistent hydrogen bonding with one of the phosphate O-atoms (in black) and occasional with the other (in red), which, in total, occur during 88% of the simulation time.
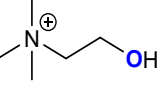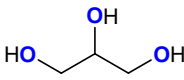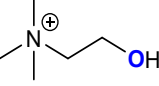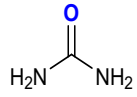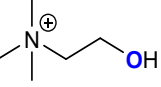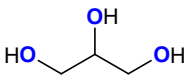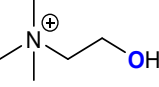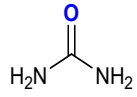
Table S4 The actual number of hydrogen bonding contacts between the relevant –OH group on the nicotinamide ribose as a donor, and solvent components as acceptors, among 150.000 structures obtained during 300 ns of molecular dynamics simulations.

COENZYME	WATER	CHOLINE–GLYCEROL–WATER			CHOLINE–UREA–WATER		
NAD⁺	H–O–H	H–O–H	choline	glycerol	H–O–H	choline	urea
	85.187	11.487	285	34.084	35.804	1.256	22.585
TOTAL	85.187	45.856			59.645		
COENZYME	WATER	CHOLINE–GLYCEROL–WATER			CHOLINE–UREA–WATER		
NADH	H–O–H	H–O–H	choline	glycerol	H–O–H	choline	urea
	67.566	26.438	1.039	13.814	18.919	944	25.656
TOTAL	67.566	41.291			45.519		
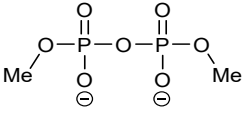
Table S5 Calculated activation ($\Delta G^{\ddagger}$) and reaction (ΔG_R) free energies for the cleavage of the adenine-ribosyl N–C bond under different circumstances. All values are in kcal mol⁻¹ and are obtained through the (SMD)/M06–2X/6–31+G(d) calculations.

NAD coenzyme	Degradation reaction	X = OH		X = O⁻	
		$\Delta G^{\ddagger}$	ΔG_R	$\Delta G^{\ddagger}$	ΔG_R
NAD⁺ / NADH		–	36.6	29.5	4.8

Table S6 The actual number of hydrogen bonding contacts between the relevant –OH group on the adenine ribose as a donor, and solvent components as acceptors, among 150.000 structures obtained during 300 ns of molecular dynamics simulations.

COENZYME	WATER	CHOLINE–GLYCEROL–WATER			CHOLINE–UREA–WATER		
NAD+	H₂O 45.716	H₂O 7.640	choline 775	glycerol 18.828	H₂O 19.095	choline 1.679	urea 20.755
TOTAL	45.716	27.243			41.529		
COENZYME	WATER	CHOLINE–GLYCEROL–WATER			CHOLINE–UREA–WATER		
NADH	H₂O 66.315	H₂O 15.533	choline 1.553	glycerol 15.622	H₂O 19.862	choline 1.025	urea 28.357
TOTAL	66.315	32.708			49.244		

Cartesian coordinates, total electronic energies and thermal corrections for various stationary points identified through (SMD)/M06–2X/6–31+G(d) calculations

System:	model phosphodiester
Stationary point:	isolated
Structure	
M06–2X/6–31+G(d) energy (in a.u.):	-1289.35610789
Thermal correction to Gibbs Free Energy (in a.u.):	0.070401
Number of imaginary frequencies:	0

CARTESIAN COORDINATES

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---------------------------------------------------------------------
Center   Atomic   Atomic          Coordinates (Angstroms)
Number   Number    Type       X        Y        Z
---------------------------------------------------------------------
  1       15       0      -1.439195  -0.575136  -0.134626
  2       15       0       1.532185  -0.475708   0.093205
  3        8       0      -1.716549   0.989218  -0.474382
  4        8       0       1.386644   1.086748   0.510092
  5        8       0       0.105677  -0.768453  -0.667540
  6        8       0      -1.505855  -0.798695   1.351633
  7        8       0       1.611854  -1.254216   1.376005
  8        8       0      -2.275428  -1.387965  -1.084469
  9        8       0       2.581859  -0.642753  -0.973422
 10        6       0      -1.714383   1.974105   0.567794
 11        6       0       1.393949   2.072110  -0.531859
 12        1       0      -1.749996   2.945262   0.071756
 13        1       0      -2.597840   1.852975   1.199929
 14        1       0       2.376952   2.110100  -1.008492
 15        1       0       1.178147   3.030571  -0.058194
 16        1       0      -0.810914   1.903954   1.177030
 17        1       0       0.625787   1.851446  -1.279655
---------------------------------------------------------------------
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System:	model phosphodiester + H$_2$O
Stationary point:	reacting complex
M06–2X/6–31+G(d) energy (in a.u.):	-1365.76842836
Thermal correction to Gibbs Free Energy (in a.u.):	0.092031
Number of imaginary frequencies:	0

CARTESIAN COORDINATES

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---------------------------------------------------------------------
Center   Atomic    Atomic        Coordinates (Angstroms)
Number   Number    Type       X        Y        Z
---------------------------------------------------------------------
   1       15       0      1.469746  -0.470677  -0.502167
   2       15       0     -1.517089  -0.332418  -0.425426
   3        8       0      1.716991  -0.506835   1.100724
   4        8       0     -1.359931   0.369115   1.027558
   5        8       0     -0.058822  -1.059705  -0.628956
   6        8       0      1.524616   0.954413  -0.992264
   7        8       0     -1.679690   0.792159  -1.414438
   8        8       0      2.341414  -1.526621  -1.121118
   9        8       0     -2.511485  -1.459337  -0.376268
  10        6       0      1.718287   0.706633   1.866527
  11        6       0     -1.341954  -0.468013   2.192844
  12        1       0      1.774446   0.406033   2.913723
  13        1       0      2.592553   1.310670   1.610726
  14        1       0     -2.328677  -0.910107   2.352242
  15        1       0     -1.086435   0.175466   3.035552
  16        1       0      0.805990   1.282418   1.695148
  17        1       0     -0.590967  -1.257502   2.092708
  18        8       0     -0.255399   3.029699  -0.453904
  19        1       0     -0.971867   2.437528  -0.760572
  20        1       0      0.515557   2.427090  -0.512518
---------------------------------------------------------------------
```

System:	model phosphodiester + H_2O
Stationary point:	transition state
M06–2X/6–31+G(d) energy (in a.u.):	-1365.70322510
Thermal correction to Gibbs Free Energy (in a.u.):	0.092379
Number of imaginary frequencies:	1 (–199i)

CARTESIAN COORDINATES
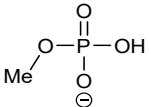
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Center   Atomic    Atomic         Coordinates (Angstroms)
Number   Number     Type        X        Y        Z
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   2       15        0      -1.803027  -0.579314   0.195696
   3        8        0       1.303560   0.459842   1.071056
   4        8        0      -1.706875   0.668041  -0.907784
   5        8        0      -0.494106  -1.344414  -0.081405
   6        8        0       1.367896   0.189919  -1.535791
   7        8        0      -3.065284  -1.375825  -0.167026
   8        8        0       2.222202  -1.735952   0.136974
   9        8        0      -1.872883   0.075097   1.583211
  10        6        0       0.884173   1.831652   0.921268
  11        6        0      -2.664133   1.712837  -0.796433
  12        1        0       0.547663   2.148967   1.907606
  13        1        0       1.730683   2.445970   0.600787
  14        1        0      -3.687041   1.317446  -0.813388
  15        1        0      -2.526897   2.376345  -1.653307
  16        1        0       0.065489   1.902199   0.202568
  17        1        0      -2.515632   2.283796   0.127332
  18        8        0       3.536157   0.417855  -0.228151
  19        1        0       3.559514   1.366926  -0.462992
  20        1        0       4.006683   0.331650   0.624315
---------------------------------------------------------------------
```

System:	model phosphodiester + H_2O
Stationary point:	product complex
M06–2X/6–31+G(d) energy (in a.u.):	-1365.76254601
Thermal correction to Gibbs Free Energy (in a.u.):	0.090251
Number of imaginary frequencies:	0

CARTESIAN COORDINATES

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Center   Atomic    Atomic          Coordinates (Angstroms)
Number   Number     Type       X        Y        Z
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   3        8       0       3.484269  -0.246279   0.105165
   4        8       0      -2.753824   1.274228  -0.100682
   5        8       0      -1.572215  -0.769079  -1.110078
   6        8       0       1.471165   0.905812  -1.010438
   7        8       0      -3.786055  -0.969376   0.283632
   8        8       0       1.758862  -1.704206  -0.965802
   9        8       0      -1.597814  -0.413635   1.419908
  10        6       0       3.943958   0.980200   0.687180
  11        6       0      -1.645286   2.142678  -0.357284
  12        1       0       3.885406   1.793435  -0.040811
  13        1       0       3.353905   1.231587   1.573879
  14        1       0      -1.244294   1.966211  -1.359018
  15        1       0      -0.855724   1.995345   0.388093
  16        1       0       4.983127   0.819381   0.975482
  17        1       0      -2.021853   3.163923  -0.286670
  18        8       0       1.157774  -0.335512   1.139098
  19        1       0       1.371967  -1.123939   1.671137
  20        1       0      -0.626630  -0.347667   1.265718
---------------------------------------------------------------------
```

System:	model phosphodiester + H_2O
Stationary point:	isolated product
Structure	
M06–2X/6–31+G(d) energy (in a.u.):	-682.876709817
Thermal correction to Gibbs Free Energy (in a.u.):	0.035260
Number of imaginary frequencies:	0

CARTESIAN COORDINATES

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-------------------------------------------------------------------
Center   Atomic   Atomic        Coordinates (Angstroms)
Number   Number    Type       X        Y        Z
-------------------------------------------------------------------
   1       15       0      0.477047  -0.119951   0.018506
   2        8       0     -0.937974  -0.188677  -0.786827
   3        8       0      0.387939  -0.918942   1.292514
   4        8       0      1.540520  -0.407686  -1.008726
   5        6       0     -2.147664   0.020637  -0.049323
   6        1       0     -2.288444  -0.773370   0.689030
   7        1       0     -2.130554   0.994002   0.450862
   8        1       0     -2.963982  -0.001670  -0.771997
   9        8       0      0.556168   1.441978   0.490899
  10        1       0      0.740032   2.043100  -0.252421
-------------------------------------------------------------------
```

System:	model phosphodiester + OH$^-$
Stationary point:	reacting complex
M06–2X/6–31+G(d) energy (in a.u.):	-1365.26853572
Thermal correction to Gibbs Free Energy (in a.u.):	0.076378
Number of imaginary frequencies:	0

CARTESIAN COORDINATES

```
---------------------------------------------------------------------
Center   Atomic    Atomic      Coordinates (Angstroms)
Number   Number     Type      X        Y        Z
---------------------------------------------------------------------
   1       15        0      1.538746  -0.528037  -0.240526
   2       15        0     -1.381525  -0.775896  -0.039476
   3        8        0      1.738521   0.076429   1.252969
   4        8        0     -2.351974   0.521649  -0.068214
   5        8        0      0.000170  -0.065634  -0.590856
   6        8        0      2.407668   0.210531  -1.222295
   7        8        0     -1.889224  -1.720813  -1.092880
   8        8        0      1.600756  -2.024888  -0.114876
   9        8        0     -1.164860  -1.244718   1.375063
  10        6        0      1.871491   1.498625   1.386412
  11        6        0     -2.179105   1.510710   0.956131
  12        1        0      1.694719   1.733996   2.436619
  13        1        0      2.880273   1.808350   1.101263
  14        1        0     -2.601473   1.150460   1.897845
  15        1        0     -2.713323   2.402070   0.625914
  16        1        0      1.138454   2.023128   0.764862
  17        1        0     -1.120151   1.751295   1.094211
  18        8        0     -0.284679   2.834905  -1.604830
  19        1        0     -0.242167   1.933997  -1.248598
---------------------------------------------------------------------
```

System:	model phosphodiester + OH⁻
Stationary point:	transition state
M06–2X/6–31+G(d) energy (in a.u.):	-1365.24101003
Thermal correction to Gibbs Free Energy (in a.u.):	0.079239
Number of imaginary frequencies:	1 (–282*i*)
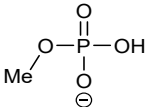
CARTESIAN COORDINATES

```
---------------------------------------------------------------------
Center   Atomic    Atomic        Coordinates (Angstroms)
Number   Number     Type       X         Y         Z
---------------------------------------------------------------------
   1       15        0      1.447132  -0.424658  -0.218682
   2       15        0     -1.609471  -0.545623   0.240137
   3        8        0      1.231757   0.571792   1.053061
   4        8        0     -1.696062   0.611233  -0.921611
   5        8        0     -0.169432  -1.152260  -0.060218
   6        8        0      1.278061   0.188917  -1.592212
   7        8        0     -2.643877  -1.617064  -0.054246
   8        8        0      2.190487  -1.690256   0.149559
   9        8        0     -1.705758   0.128199   1.596593
  10        6        0      0.932899   1.947017   0.810519
  11        6        0     -2.749611   1.569047  -0.813441
  12        1        0      0.815152   2.414608   1.789697
  13        1        0      1.752784   2.426764   0.269629
  14        1        0     -3.726444   1.074991  -0.768730
  15        1        0     -2.704366   2.194110  -1.706556
  16        1        0      0.002607   2.054372   0.243987
  17        1        0     -2.614169   2.192959   0.075693
  18        8        0      3.501048   0.569781  -0.263903
  19        1        0      3.919997   0.217292   0.535781
---------------------------------------------------------------------
```

System:	model phosphodiester + OH⁻
Stationary point:	product complex
M06–2X/6–31+G(d) energy (in a.u.):	-1365.30578050
Thermal correction to Gibbs Free Energy (in a.u.):	0.077070
Number of imaginary frequencies:	0
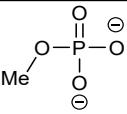
CARTESIAN COORDINATES

```
---------------------------------------------------------------------
Center   Atomic    Atomic       Coordinates (Angstroms)
Number   Number     Type      X        Y         Z
---------------------------------------------------------------------
   1      15        0      1.866374  -0.391831  -0.214907
   2      15        0     -2.306379  -0.378004   0.080185
   3       8        0      3.311725  -0.268627   0.550193
   4       8        0     -2.899113   1.168315  -0.076696
   5       8        0     -1.599105  -0.711319  -1.235371
   6       8        0      2.023892   0.164439  -1.617136
   7       8        0     -3.555979  -1.193864   0.396657
   8       8        0      1.443318  -1.834671  -0.048090
   9       8        0     -1.307509  -0.307292   1.271829
  10       6        0      3.993619   0.986313   0.496382
  11       6        0     -1.945506   2.209370  -0.266779
  12       1        0      4.888993   0.888777   1.111977
  13       1        0      4.281754   1.225462  -0.531504
  14       1        0     -1.355704   2.367098   0.643043
  15       1        0     -2.499806   3.121612  -0.496825
  16       1        0      3.364937   1.787996   0.898135
  17       1        0     -1.270929   1.979957  -1.099864
  18       8        0      0.945480   0.585256   0.660709
  19       1        0      0.000475   0.184639   0.901498
---------------------------------------------------------------------
```

System:	model phosphodiester + OH⁻
Stationary point:	isolated product1
Structure	
M06–2X/6–31+G(d) energy (in a.u.):	-682.876709817
Thermal correction to Gibbs Free Energy (in a.u.):	0.035260
Number of imaginary frequencies:	0

CARTESIAN COORDINATES

```
---------------------------------------------------------------------
Center   Atomic   Atomic        Coordinates (Angstroms)
Number   Number    Type       X        Y        Z
---------------------------------------------------------------------
   1      15       0      0.477047  -0.119951   0.018506
   2       8       0     -0.937974  -0.188677  -0.786827
   3       8       0      0.387939  -0.918942   1.292514
   4       8       0      1.540520  -0.407686  -1.008726
   5       6       0     -2.147664   0.020637  -0.049323
   6       1       0     -2.288444  -0.773370   0.689030
   7       1       0     -2.130554   0.994002   0.450862
   8       1       0     -2.963982  -0.001670  -0.771997
   9       8       0      0.556168   1.441978   0.490899
  10       1       0      0.740032   2.043100  -0.252421
---------------------------------------------------------------------
```

System:	model phosphodiester + OH⁻
Stationary point:	isolated product2
Structure	
M06–2X/6–31+G(d) energy (in a.u.):	-682.415283181
Thermal correction to Gibbs Free Energy (in a.u.):	0.024832
Number of imaginary frequencies:	0

CARTESIAN COORDINATES

```
---------------------------------------------------------------------
Center   Atomic    Atomic         Coordinates (Angstroms)
Number   Number     Type        X        Y        Z
---------------------------------------------------------------------
   1       15        0       0.504043   0.043034   0.000149
   2        8        0      -0.941833  -0.799819  -0.001708
   3        8        0       0.497947   0.891021  -1.282317
   4        8        0       1.532881  -1.095406   0.002012
   5        8        0       0.494404   0.892171   1.281680
   6        6        0      -2.140222  -0.034676  -0.000061
   7        1        0      -2.205627   0.593294   0.895924
   8        1        0      -2.977874  -0.735777  -0.004512
   9        1        0      -2.203013   0.601297  -0.890619
---------------------------------------------------------------------
```

System:	model phosphodiester + H_3O^+
Stationary point:	reacting complex
M06–2X/6–31+G(d) energy (in a.u.):	-1366.16219602
Thermal correction to Gibbs Free Energy (in a.u.):	0.106643
Number of imaginary frequencies:	0

CARTESIAN COORDINATES

```
---------------------------------------------------------------------
Center   Atomic    Atomic          Coordinates (Angstroms)
Number   Number     Type        X          Y          Z
---------------------------------------------------------------------
   1       15        0      -1.478814  -0.020691   0.095398
   2       15        0       1.399174  -0.648878  -0.222247
   3        8        0      -1.624441   1.562929  -0.474948
   4        8        0       1.887262   0.473992   0.801022
   5        8        0      -0.022757  -0.161572  -0.781469
   6        8        0      -1.353110   0.218226   1.583778
   7        8        0       1.091923  -1.871947   0.719954
   8        8        0      -2.861433  -0.283168  -0.729562
   9        8        0       2.353384  -0.877996  -1.339462
  10        6        0      -0.594860   2.492955  -0.176260
  11        6        0       2.770003   1.519254   0.343529
  12        1        0       0.238255   2.384374  -0.878438
  13        1        0      -1.020695   3.493483  -0.284254
  14        1        0       3.785598   1.126581   0.266903
  15        1        0       2.724584   2.303702   1.098231
  16        1        0      -0.225532   2.373782   0.848395
  17        1        0       2.446442   1.912744  -0.621970
  18        8        0      -1.381559  -1.822055   0.326939
  19        1        0      -3.194208  -1.185398  -0.588706
  20        1        0      -1.393561  -2.312207  -0.515882
  21        1        0       0.068703  -2.034055   0.724826
---------------------------------------------------------------------
```

System:	model phosphodiester + H_3O^+
Stationary point:	transition state
M06–2X/6–31+G(d) energy (in a.u.):	-1366.15870467
Thermal correction to Gibbs Free Energy (in a.u.):	0.107430
Number of imaginary frequencies:	1 (–112i)
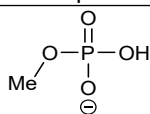
CARTESIAN COORDINATES

```
---------------------------------------------------------------------
Center   Atomic    Atomic      Coordinates (Angstroms)
Number   Number     Type       X       Y       Z
---------------------------------------------------------------------
   1      15        0     -1.523483  -0.076031   0.120314
   2      15        0      1.468842  -0.579171  -0.249709
   3       8        0     -1.731196   1.417174  -0.572552
   4       8        0      1.954087   0.392204   0.930174
   5       8        0      0.084985  -0.057072  -0.774095
   6       8        0     -1.163941   0.096380   1.575345
   7       8        0      1.194833  -1.926614   0.554195
   8       8        0     -3.158237  -0.239702  -0.149617
   9       8        0      2.488484  -0.698783  -1.333388
  10       6        0     -0.724744   2.418348  -0.434184
  11       6        0      2.703791   1.569654   0.573101
  12       1        0     -0.030509   2.384488  -1.276781
  13       1        0     -1.245959   3.378395  -0.426584
  14       1        0      3.708720   1.284822   0.254816
  15       1        0      2.755009   2.181290   1.473218
  16       1        0     -0.173361   2.302866   0.504368
  17       1        0      2.201201   2.125779  -0.222752
  18       8        0     -1.381951  -1.779009  -0.063022
  19       1        0     -3.416600  -1.167248  -0.023233
  20       1        0     -1.381024  -2.063841  -0.994509
  21       1        0      0.231329  -2.163153   0.482559
---------------------------------------------------------------------
```

System:	model phosphodiester + H₃O⁺
Stationary point:	product complex
M06–2X/6–31+G(d) energy (in a.u.):	-1366.21528717
Thermal correction to Gibbs Free Energy (in a.u.):	0.101887
Number of imaginary frequencies:	0
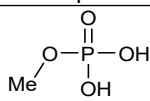
CARTESIAN COORDINATES

```
---------------------------------------------------------------------
Center   Atomic    Atomic         Coordinates (Angstroms)
Number   Number     Type       X        Y        Z
---------------------------------------------------------------------
   1      15        0      -1.705168  -0.468117  -0.099157
   2      15        0       2.054775  -0.275930   0.107977
   3       8        0      -1.829083   1.111145  -0.256724
   4       8        0       1.207032   1.106364   0.200194
   5       8        0       1.493311  -1.066538  -1.082201
   6       8        0      -1.104517  -0.904782   1.203437
   7       8        0       1.601811  -0.952269   1.492386
   8       8        0      -3.227368  -0.925664  -0.277126
   9       8        0       3.537241  -0.050080   0.125665
  10       6        0      -2.048777   1.920352   0.915777
  11       6        0       1.146438   1.941146  -0.965262
  12       1        0      -1.188490   1.844696   1.584303
  13       1        0      -2.158649   2.943192   0.558233
  14       1        0       2.152447   2.249687  -1.265975
  15       1        0       0.561377   2.819090  -0.689305
  16       1        0      -2.960571   1.605172   1.429582
  17       1        0       0.654274   1.413546  -1.787361
  18       8        0      -0.957608  -0.940615  -1.385333
  19       1        0      -3.381769  -1.868531  -0.078787
  20       1        0       0.111026  -0.995486  -1.269195
  21       1        0       0.613720  -1.040152   1.520743
---------------------------------------------------------------------
```

System:	model phosphodiester + H₃O⁺
Stationary point:	isolated product1
Structure	
M06–2X/6–31+G(d) energy (in a.u.):	-682.876709817
Thermal correction to Gibbs Free Energy (in a.u.):	0.035260
Number of imaginary frequencies:	0

CARTESIAN COORDINATES

```
-------------------------------------------------------------------
Center   Atomic   Atomic        Coordinates (Angstroms)
Number   Number    Type       X        Y        Z
-------------------------------------------------------------------
   1       15       0      0.477047  -0.119951   0.018506
   2        8       0     -0.937974  -0.188677  -0.786827
   3        8       0      0.387939  -0.918942   1.292514
   4        8       0      1.540520  -0.407686  -1.008726
   5        6       0     -2.147664   0.020637  -0.049323
   6        1       0     -2.288444  -0.773370   0.689030
   7        1       0     -2.130554   0.994002   0.450862
   8        1       0     -2.963982  -0.001670  -0.771997
   9        8       0      0.556168   1.441978   0.490899
  10        1       0      0.740032   2.043100  -0.252421
-------------------------------------------------------------------
```

System:	model phosphodiester + H_3O^+
Stationary point:	isolated product2
Structure	
M06–2X/6–31+G(d) energy (in a.u.):	-683.311613795
Thermal correction to Gibbs Free Energy (in a.u.):	0.045567
Number of imaginary frequencies:	0

CARTESIAN COORDINATES

```
---------------------------------------------------------------------
Center    Atomic    Atomic        Coordinates (Angstroms)
Number    Number    Type        X         Y         Z
---------------------------------------------------------------------
   1        15        0      -0.389261  -0.004827   0.105489
   2         8        0       0.956176  -0.572887  -0.517709
   3         8        0      -0.448660   0.014550   1.589805
   4         8        0      -0.525449   1.416060  -0.600842
   5         6        0       2.215103  -0.053664  -0.032848
   6         1        0       2.305438  -0.236889   1.039609
   7         1        0       2.989267  -0.595290  -0.573314
   8         1        0       2.283611   1.014967  -0.248874
   9         8        0      -1.506909  -0.868230  -0.626585
  10         1        0      -1.141014   2.026092  -0.152175
  11         1        0      -1.690281  -1.730433  -0.207846
---------------------------------------------------------------------
```

System:	model phosphodiester + glycerol
Stationary point:	reacting complex
M06–2X/6–31+G(d) energy (in a.u.):	-1634.02245581
Thermal correction to Gibbs Free Energy (in a.u.):	0.173842
Number of imaginary frequencies:	0

CARTESIAN COORDINATES

```
---------------------------------------------------------------------
Center   Atomic    Atomic       Coordinates (Angstroms)
Number   Number     Type       X        Y        Z
---------------------------------------------------------------------
   1       15        0      -0.707613  -1.178744  -0.000814
   2       15        0      -3.362893   0.111832   0.313686
   3        8        0      -0.199534   0.113885   0.831113
   4        8        0      -2.817218   0.934692  -0.980842
   5        8        0      -2.341157  -1.157490   0.236218
   6        8        0      -0.433434  -1.018981  -1.471652
   7        8        0      -4.744970  -0.429984   0.058240
   8        8        0      -0.217255  -2.393529   0.737714
   9        8        0      -3.117146   0.914642   1.565939
  10        6        0       0.008127   1.402242   0.241225
  11        6        0      -3.221708   2.301280  -1.118888
  12        1        0       0.965877   1.776638   0.611097
  13        1        0       0.032241   1.339758  -0.848981
  14        1        0      -4.309823   2.373226  -1.216233
  15        1        0      -2.750086   2.676636  -2.027530
  16        1        0      -0.795298   2.072805   0.556925
  17        1        0      -2.887329   2.890369  -0.260029
  18        8        0       2.884303  -1.916918  -0.916437
  19        6        0       2.784880  -0.599835  -0.389022
  20        1        0       3.393532  -2.452493  -0.286671
  21        6        0       4.135669   0.083259  -0.316154
  22        1        0       2.127418  -0.041713  -1.060711
  23        1        0       2.332086  -0.623798   0.611238
  24        6        0       3.997900   1.511080   0.174186
  25        8        0       4.943608  -0.680422   0.577275
  26        1        0       4.597565   0.085188  -1.314110
  27        8        0       5.310669   2.064894   0.235580
  28        1        0       3.368070   2.083232  -0.518413
  29        1        0       3.536779   1.517608   1.169937
  30        1        0       5.267977   2.911302   0.707153
  31        1        0       5.806433  -0.239531   0.649962
---------------------------------------------------------------------
```

System:	model phosphodiester + glycerol
Stationary point:	transition state
M06–2X/6–31+G(d) energy (in a.u.):	-1633.97100039
Thermal correction to Gibbs Free Energy (in a.u.):	0.176075
Number of imaginary frequencies:	1 (–174*i*)
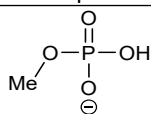
CARTESIAN COORDINATES

```
---------------------------------------------------------------------
Center   Atomic   Atomic          Coordinates (Angstroms)
Number   Number    Type        X         Y         Z
---------------------------------------------------------------------
   1      15       0       0.028443  -0.953498  -0.263330
   2      15       0      -3.557450  -0.140235   0.111486
   3       8       0       0.071635  -0.409837   1.234803
   4       8       0      -2.966076   1.239426  -0.614140
   5       8       0      -2.325230  -1.065124   0.103778
   6       8       0      -0.202907   0.060104  -1.327727
   7       8       0      -4.704162  -0.636336  -0.780328
   8       8       0      -0.025021  -2.438211  -0.341416
   9       8       0      -4.012728   0.278179   1.517459
  10       6       0      -0.359735   0.925765   1.554391
  11       6       0      -3.854245   2.346151  -0.713850
  12       1       0       0.141997   1.189094   2.485761
  13       1       0      -0.076994   1.626639   0.765794
  14       1       0      -4.756593   2.078839  -1.276072
  15       1       0      -3.327401   3.142115  -1.244609
  16       1       0      -1.442558   0.928449   1.693416
  17       1       0      -4.143041   2.708296   0.279345
  18       8       0       1.964812  -0.897086  -0.399535
  19       6       0       2.652755   0.344620  -0.118238
  20       1       0       2.384450  -1.619294   0.115409
  21       6       0       4.133168   0.110523  -0.318878
  22       1       0       2.259198   1.078961  -0.821245
  23       1       0       2.436438   0.641078   0.913371
  24       6       0       4.926160   1.364960  -0.011632
  25       8       0       4.477955  -0.953963   0.563195
  26       1       0       4.317774  -0.195727  -1.356794
  27       8       0       6.295391   1.061431  -0.254565
  28       1       0       4.587400   2.183997  -0.657919
  29       1       0       4.775101   1.647384   1.037402
  30       1       0       6.835683   1.807930   0.047387
  31       1       0       5.365677  -1.272541   0.333447
---------------------------------------------------------------------
```

System:	model phosphodiester + glycerol
Stationary point:	product complex
M06–2X/6–31+G(d) energy (in a.u.):	-1634.02443862
Thermal correction to Gibbs Free Energy (in a.u.):	0.174925
Number of imaginary frequencies:	0

CARTESIAN COORDINATES
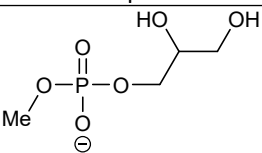
```
-------------------------------------------------------------------
Center   Atomic    Atomic        Coordinates (Angstroms)
Number   Number     Type       X        Y        Z
-------------------------------------------------------------------
   1      15        0      1.751161   1.036538  -0.593294
   2      15        0      0.980444  -1.800533   0.017426
   3       8        0      2.787190   0.844400   0.649561
   4       8        0     -0.242091  -1.190105   0.885839
   5       8        0      1.460936  -0.533185  -0.919897
   6       8        0      0.501470   1.726604  -0.110682
   7       8        0      0.385442  -2.789851  -0.946011
   8       8        0      2.470273   1.592448  -1.795085
   9       8        0      2.116529  -2.193425   0.923799
  10       6        0      3.053952   1.992634   1.463559
  11       6        0     -0.004343  -0.590206   2.165815
  12       1        0      3.817413   1.695098   2.182791
  13       1        0      3.430708   2.821339   0.855225
  14       1        0      0.189765  -1.366914   2.910062
  15       1        0     -0.915875  -0.048177   2.427089
  16       1        0      2.149057   2.303640   1.993642
  17       1        0      0.836444   0.107859   2.133777
  18       8        0     -1.486736  -0.231718  -2.232328
  19       1        0     -1.730048   0.640736  -2.584468
  20       6        0     -2.493552  -0.619376  -1.304164
  21       1        0     -2.166863  -1.564870  -0.865786
  22       6        0     -2.679290   0.422395  -0.220133
  23       1        0     -3.448708  -0.781045  -1.823093
  24       6        0     -3.610797  -0.068369   0.868884
  25       1        0     -1.703076   0.660154   0.218898
  26       8        0     -3.204050   1.588304  -0.860071
  27       8        0     -3.745236   0.986809   1.818872
  28       1        0     -4.589595  -0.322606   0.441868
  29       1        0     -3.182153  -0.961855   1.341241
  30       1        0     -4.417718   0.734415   2.470178
  31       1        0     -3.189047   2.317455  -0.219143
-------------------------------------------------------------------
```

System:	model phosphodiester + glycerol
Stationary point:	isolated product1
Structure	
M06–2X/6–31+G(d) energy (in a.u.):	-682.876709817
Thermal correction to Gibbs Free Energy (in a.u.):	0.035260
Number of imaginary frequencies:	0

CARTESIAN COORDINATES

```
---------------------------------------------------------------------
Center  Atomic   Atomic        Coordinates (Angstroms)
Number  Number    Type         X        Y        Z
---------------------------------------------------------------------
   1      15       0      0.477047  -0.119951   0.018506
   2       8       0     -0.937974  -0.188677  -0.786827
   3       8       0      0.387939  -0.918942   1.292514
   4       8       0      1.540520  -0.407686  -1.008726
   5       6       0     -2.147664   0.020637  -0.049323
   6       1       0     -2.288444  -0.773370   0.689030
   7       1       0     -2.130554   0.994002   0.450862
   8       1       0     -2.963982  -0.001670  -0.771997
   9       8       0      0.556168   1.441978   0.490899
  10       1       0      0.740032   2.043100  -0.252421
---------------------------------------------------------------------
```

System:	model phosphodiester + glycerol
Stationary point:	isolated product2
Structure	
M06–2X/6–31+G(d) energy (in a.u.):	-951.143975062
Thermal correction to Gibbs Free Energy (in a.u.):	0.121272
Number of imaginary frequencies:	0

CARTESIAN COORDINATES

```
---------------------------------------------------------------------
Center   Atomic   Atomic        Coordinates (Angstroms)
Number   Number   Type        X         Y         Z
---------------------------------------------------------------------
   1       15      0       -1.923665  -0.473187  -0.059062
   2        8      0       -2.379784   1.076416  -0.269019
   3        8      0       -1.977202  -0.838008   1.403268
   4        8      0       -2.701581  -1.260710  -1.078179
   5        6      0       -1.715991   2.089919   0.494488
   6        1      0       -2.234965   3.027427   0.292079
   7        1      0       -1.768321   1.866009   1.564233
   8        1      0       -0.670777   2.178228   0.181426
   9        8      0       -0.363266  -0.441894  -0.542783
  10        6      0        0.695016  -0.488290   0.420651
  11        1      0        0.719551  -1.474692   0.894622
  12        6      0        1.995186  -0.231950  -0.305351
  13        1      0        0.543133   0.275684   1.191728
  14        6      0        3.175310  -0.407909   0.632252
  15        1      0        2.090824  -0.940800  -1.140551
  16        8      0        1.957523   1.098540  -0.811911
  17        8      0        4.346337  -0.097601  -0.119008
  18        1      0        3.078339   0.276143   1.484511
  19        1      0        3.211406  -1.440225   0.999258
  20        1      0        2.834969   1.292944  -1.182783
  21        1      0        5.097493  -0.027479   0.490219
---------------------------------------------------------------------
```

System:	model phosphodiester + urea
Stationary point:	reacting complex
M06–2X/6–31+G(d) energy (in a.u.):	-1514.56319830
Thermal correction to Gibbs Free Energy (in a.u.):	0.124486
Number of imaginary frequencies:	0

CARTESIAN COORDINATES

```
---------------------------------------------------------------------
Center   Atomic    Atomic        Coordinates (Angstroms)
Number   Number    Type       X        Y        Z
---------------------------------------------------------------------
   1      15       0       1.303186  -0.975965  -0.094817
   2      15       0       0.356188   1.791849   0.214455
   3       8       0       2.771210  -0.577695   0.490475
   4       8       0      -0.690461   1.754134  -1.023823
   5       8       0       0.437991   0.198082   0.649340
   6       8       0       1.278742  -0.793918  -1.590115
   7       8       0      -0.261241   2.488171   1.395900
   8       8       0       0.851813  -2.283441   0.501861
   9       8       0       1.684576   2.217890  -0.343198
  10       6       0       3.886927  -1.326514  -0.007428
  11       6       0      -2.094425   1.883779  -0.759912
  12       1       0       4.018595  -1.149305  -1.078841
  13       1       0       4.766482  -0.974737   0.532175
  14       1       0      -2.392404   1.297305   0.112988
  15       1       0      -2.616332   1.517770  -1.644905
  16       1       0       3.749517  -2.396515   0.178944
  17       1       0      -2.342686   2.934743  -0.590539
  18       8       0      -1.978615  -1.360893  -0.947294
  19       6       0      -2.719687  -1.286551   0.048973
  20       7       0      -4.075641  -1.368579  -0.060595
  21       7       0      -2.221112  -1.113538   1.305136
  22       1       0      -4.629449  -1.544326   0.769927
  23       1       0      -4.428247  -1.766001  -0.923010
  24       1       0      -2.850582  -0.808537   2.038965
  25       1       0      -1.277258  -0.736745   1.342975
---------------------------------------------------------------------
```

System:	model phosphodiester + urea
Stationary point:	transition state
M06–2X/6–31+G(d) energy (in a.u.):	-1514.51606288
Thermal correction to Gibbs Free Energy (in a.u.):	0.127572
Number of imaginary frequencies:	1 (−252i)
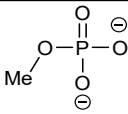
CARTESIAN COORDINATES

```
---------------------------------------------------------------------
Center   Atomic    Atomic       Coordinates (Angstroms)
Number   Number     Type       X       Y       Z
---------------------------------------------------------------------
   1      15        0      -0.866991  -0.447280  -0.208750
   2      15        0       2.556308  -0.498798  -0.139511
   3       8        0      -0.292408   0.586089  -1.291688
   4       8        0       2.313202   0.594369   1.090432
   5       8        0       1.214024  -1.271848  -0.147323
   6       8        0      -0.727461  -0.084410   1.243087
   7       8        0       3.735171  -1.382391   0.284650
   8       8        0      -1.265397  -1.769749  -0.786413
   9       8        0       2.819366   0.321383  -1.406890
  10       6        0      -0.072453   1.950613  -0.898838
  11       6        0       3.284245   1.622117   1.245513
  12       1        0       0.308337   2.460484  -1.783964
  13       1        0      -1.013695   2.409135  -0.582165
  14       1        0       4.294424   1.203791   1.329809
  15       1        0       3.045831   2.161543   2.164686
  16       1        0       0.664891   2.002931  -0.094372
  17       1        0       3.253517   2.319496   0.400769
  18       8        0      -2.567500   0.380518  -0.461682
  19       6        0      -3.596615   0.137700   0.270701
  20       7        0      -4.791360   0.478879  -0.210813
  21       7        0      -3.498672  -0.441204   1.466157
  22       1        0      -5.637153   0.355862   0.333018
  23       1        0      -4.852475   0.855747  -1.148382
  24       1        0      -4.323571  -0.573441   2.039569
  25       1        0      -2.572660  -0.522361   1.879877
---------------------------------------------------------------------
```

System:	model phosphodiester + urea
Stationary point:	product complex
M06–2X/6–31+G(d) energy (in a.u.):	-1514.53565051
Thermal correction to Gibbs Free Energy (in a.u.):	0.124631
Number of imaginary frequencies:	0
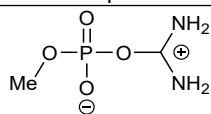
CARTESIAN COORDINATES

```
---------------------------------------------------------------------
Center   Atomic   Atomic        Coordinates (Angstroms)
Number   Number    Type       X         Y         Z
---------------------------------------------------------------------
   1      15        0      -2.461436  -0.705273   0.483449
   2      15        0       2.700109  -0.744673  -0.133967
   3       8        0      -3.129864  -1.003187  -0.946605
   4       8        0       3.990224   0.268196   0.174006
   5       8        0       1.805744  -0.693585   1.110366
   6       8        0      -3.295882   0.235674   1.301360
   7       8        0       3.385434  -2.086749  -0.392133
   8       8        0      -1.925094  -1.989294   1.017993
   9       8        0       2.002914  -0.146911  -1.380309
  10       6        0      -3.708387   0.082446  -1.691048
  11       6        0       3.694238   1.641625   0.397697
  12       1        0      -4.153297  -0.359915  -2.581672
  13       1        0      -4.477256   0.583472  -1.098452
  14       1        0       3.288715   2.107745  -0.508313
  15       1        0       4.629043   2.139571   0.664202
  16       1        0      -2.930525   0.794266  -1.984668
  17       1        0       2.978510   1.763021   1.219254
  18       8        0      -1.081113   0.148168  -0.027648
  19       6        0      -0.826489   1.445824  -0.003355
  20       7        0       0.287700   1.805105  -0.600976
  21       7        0      -1.648123   2.303333   0.576767
  22       1        0       0.585927   2.773730  -0.549098
  23       1        0       0.957087   1.063314  -0.931508
  24       1        0      -1.416300   3.290227   0.594218
  25       1        0      -2.494117   1.956840   1.027251
---------------------------------------------------------------------
```

System:	model phosphodiester + urea
Stationary point:	isolated product1
Structure	
M06–2X/6–31+G(d) energy (in a.u.):	-682.415283181
Thermal correction to Gibbs Free Energy (in a.u.):	0.024832
Number of imaginary frequencies:	0

CARTESIAN COORDINATES

```
---------------------------------------------------------------------
Center   Atomic   Atomic           Coordinates (Angstroms)
Number   Number    Type          X         Y         Z
---------------------------------------------------------------------
   1       15       0       0.504043   0.043034   0.000149
   2        8       0      -0.941833  -0.799819  -0.001708
   3        8       0       0.497947   0.891021  -1.282317
   4        8       0       1.532881  -1.095406   0.002012
   5        8       0       0.494404   0.892171   1.281680
   6        6       0      -2.140222  -0.034676  -0.000061
   7        1       0      -2.205627   0.593294   0.895924
   8        1       0      -2.977874  -0.735777  -0.004512
   9        1       0      -2.203013   0.601297  -0.890619
---------------------------------------------------------------------
```

System:	model phosphodiester + urea
Stationary point:	isolated product2
Structure	
M06–2X/6–31+G(d) energy (in a.u.):	-832.107077278
Thermal correction to Gibbs Free Energy (in a.u.):	0.082286
Number of imaginary frequencies:	0

CARTESIAN COORDINATES

```
-------------------------------------------------------------------
Center   Atomic    Atomic         Coordinates (Angstroms)
Number   Number     Type        X        Y        Z
-------------------------------------------------------------------
   1       15        0      -0.988462  -0.504231   0.083683
   2        8        0      -1.588116   0.775966  -0.673209
   3        8        0      -0.841321  -0.268728   1.556548
   4        8        0      -1.618472  -1.724751  -0.492624
   5        6        0      -1.130147   2.089942  -0.307818
   6        1        0      -1.716682   2.792756  -0.898251
   7        1        0      -1.294442   2.266799   0.757386
   8        1        0      -0.069152   2.200445  -0.553083
   9        8        0       0.588466  -0.501488  -0.584226
  10        6        0       1.722493  -0.088563  -0.057501
  11        7        0       2.751746  -0.083327  -0.884195
  12        7        0       1.823211   0.283266   1.201725
  13        1        0       3.677529   0.185791  -0.568546
  14        1        0       2.616999  -0.374966  -1.845799
  15        1        0       2.713774   0.596725   1.573464
  16        1        0       0.995675   0.240089   1.796877
-------------------------------------------------------------------
```

System:	model phosphodiester + choline
Stationary point:	reacting complex
M06–2X/6–31+G(d) energy (in a.u.):	-1617.99138010
Thermal correction to Gibbs Free Energy (in a.u.):	0.259566
Number of imaginary frequencies:	0

CARTESIAN COORDINATES

```
---------------------------------------------------------------------
Center   Atomic    Atomic       Coordinates (Angstroms)
Number   Number    Type       X       Y       Z
---------------------------------------------------------------------
   1      15        0      3.102536  -1.118691  -0.171046
   2      15        0      1.843598   1.611955  -0.008280
   3       8        0      1.833927  -2.041516   0.239865
   4       8        0      0.263390   1.408478  -0.392593
   5       8        0      2.371847   0.249645  -0.728647
   6       8        0      3.931848  -0.786976   1.038965
   7       8        0      2.005130   1.565904   1.486900
   8       8        0      3.718296  -1.766686  -1.378073
   9       8        0      2.395982   2.783144  -0.775796
  10       6        0      1.062116  -1.697933   1.396409
  11       6        0     -0.678362   2.279974   0.248879
  12       1        0      0.291676  -2.463994   1.495138
  13       1        0      1.693341  -1.690134   2.289465
  14       1        0     -0.779787   2.014914   1.305359
  15       1        0     -1.631138   2.144282  -0.263749
  16       1        0      0.587376  -0.719971   1.269367
  17       1        0     -0.363449   3.324089   0.154036
  18       8        0     -0.869377  -1.055924  -1.086786
  19       6        0     -1.943017  -1.028331  -0.160341
  20       1        0     -0.371540  -0.219207  -0.988470
  21       6        0     -3.161856  -0.443814  -0.872132
  22       1        0     -2.133077  -2.059052   0.149448
  23       1        0     -1.670959  -0.444906   0.727393
  24       7        0     -4.357621  -0.199313   0.012395
  25       1        0     -2.910192   0.519008  -1.325150
  26       1        0     -3.489297  -1.130642  -1.656950
  27       6        0     -5.520474   0.136766  -0.866037
  28       6        0     -4.688750  -1.418762   0.811184
  29       6        0     -4.112058   0.951034   0.936610
  30       1        0     -5.006576   1.089853   1.545336
  31       1        0     -3.259254   0.726476   1.576523
  32       1        0     -3.920601   1.839977   0.334635
  33       1        0     -5.635152  -1.241156   1.323849
  34       1        0     -4.777959  -2.266543   0.130178
  35       1        0     -3.899467  -1.592688   1.542590
  36       1        0     -6.374803   0.372374  -0.230413
  37       1        0     -5.252166   0.998419  -1.478767
  38       1        0     -5.739566  -0.727022  -1.494814
---------------------------------------------------------------------
```

System:	model phosphodiester + choline
Stationary point:	transition state
M06–2X/6–31+G(d) energy (in a.u.):	-1617.93042701
Thermal correction to Gibbs Free Energy (in a.u.):	0.258744
Number of imaginary frequencies:	1 (–180*i*)

CARTESIAN COORDINATES

```
--------------------------------------------------------------------
Center   Atomic   Atomic        Coordinates (Angstroms)
Number   Number    Type       X        Y        Z
--------------------------------------------------------------------
  1       15        0       0.286696  -1.381526   0.105595
  2       15        0       3.597322   0.237448  -0.416659
  3        8        0      -0.107209  -0.317766  -1.012032
  4        8        0       3.168835   0.890129   1.057230
  5        8        0       2.556036  -0.885691  -0.581221
  6        8        0       0.578539  -0.817722   1.449343
  7        8        0       5.035339  -0.273900  -0.258846
  8        8        0       0.555972  -2.735529  -0.442564
  9        8        0       3.458336   1.370176  -1.444446
 10        6        0      -0.012791   1.091289  -0.717672
 11        6        0       3.956107   1.972825   1.538548
 12        1        0      -0.375205   1.604808  -1.608078
 13        1        0      -0.635169   1.344827   0.144085
 14        1        0       4.997401   1.665750   1.688806
 15        1        0       3.534840   2.283232   2.497218
 16        1        0       1.027583   1.359704  -0.525953
 17        1        0       3.926930   2.820334   0.844032
 18        8        0      -1.581775  -1.821065   0.497391
 19        6        0      -2.581847  -0.861544   0.893857
 20        1        0      -1.938265  -2.517921  -0.089144
 21        6        0      -3.287644  -0.353976  -0.358301
 22        1        0      -3.262498  -1.373237   1.575118
 23        1        0      -2.039187  -0.083703   1.433506
 24        7        0      -4.263154   0.759892  -0.101164
 25        1        0      -2.562115   0.022366  -1.083847
 26        1        0      -3.857490  -1.170501  -0.810532
 27        6        0      -5.032902   0.985343  -1.365779
 28        6        0      -5.221270   0.399298   0.989646
 29        6        0      -3.552052   2.027083   0.256195
 30        1        0      -5.995935   1.166361   1.022252
 31        1        0      -5.657394  -0.574131   0.760093
 32        1        0      -4.689340   0.372653   1.940803
 33        1        0      -4.304730   2.802012   0.406982
 34        1        0      -2.986135   1.878925   1.175577
 35        1        0      -2.889558   2.294197  -0.567959
 36        1        0      -5.703424   1.830638  -1.209928
 37        1        0      -4.325210   1.202278  -2.166632
 38        1        0      -5.601496   0.082366  -1.590110
--------------------------------------------------------------------
```

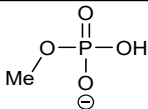| System:	model phosphodiester + choline
Stationary point:	product complex
M06–2X/6–31+G(d) energy (in a.u.):	-1617.96783750
Thermal correction to Gibbs Free Energy (in a.u.):	0.257730
Number of imaginary frequencies:	0
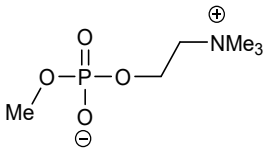
CARTESIAN COORDINATES

```
---------------------------------------------------------------------
Center   Atomic    Atomic         Coordinates (Angstroms)
Number   Number     Type        X        Y        Z
---------------------------------------------------------------------
   1       15        0      0.159858   1.911200   0.702939
   2       15        0      2.456686  -1.717218   0.404923
   3        8        0     -0.321901   3.321239   0.064054
   4        8        0      1.805010  -0.816833  -1.071458
   5        8        0      1.189680  -1.691460   1.232915
   6        8        0      1.650958   1.870852   0.873425
   7        8        0      3.596474  -0.819744   0.837238
   8        8        0     -0.794427   1.608373   1.821177
   9        8        0      2.839025  -3.027566  -0.251004
  10        6        0      0.446552   3.870178  -1.016471
  11        6        0      2.747322  -0.151098  -1.945236
  12        1        0     -0.087129   4.756969  -1.358765
  13        1        0      1.444400   4.149496  -0.669402
  14        1        0      3.195544   0.696726  -1.425603
  15        1        0      2.196802   0.173078  -2.828141
  16        1        0      0.524509   3.149955  -1.836932
  17        1        0      3.503977  -0.886456  -2.216747
  18        8        0     -0.122732   0.870981  -0.558923
  19        6        0     -1.469314   0.494157  -0.873498
  20        1        0      1.054613  -0.190841  -0.826013
  21        6        0     -1.761485  -0.797585  -0.115065
  22        1        0     -2.149225   1.308130  -0.606376
  23        1        0     -1.502406   0.345791  -1.954043
  24        7        0     -3.211249  -1.194051  -0.106223
  25        1        0     -1.207536  -1.624397  -0.567566
  26        1        0     -1.462022  -0.692748   0.929710
  27        6        0     -3.306950  -2.563147   0.490208
  28        6        0     -4.013944  -0.251598   0.734544
  29        6        0     -3.763262  -1.232181  -1.494590
  30        1        0     -4.772713  -1.642125  -1.446902
  31        1        0     -3.794007  -0.218660  -1.895003
  32        1        0     -3.120596  -1.869091  -2.104497
  33        1        0     -5.043372  -0.611283   0.752130
  34        1        0     -3.592578  -0.246456   1.740462
  35        1        0     -3.978526   0.745936   0.298431
  36        1        0     -4.360481  -2.839096   0.545485
  37        1        0     -2.763352  -3.258317  -0.150558
  38        1        0     -2.865517  -2.537065   1.487227
---------------------------------------------------------------------
```

System:	model phosphodiester + choline
Stationary point:	isolated product1
Structure	
M06–2X/6–31+G(d) energy (in a.u.):	-682.876709817
Thermal correction to Gibbs Free Energy (in a.u.):	0.035260
Number of imaginary frequencies:	0

CARTESIAN COORDINATES

```
--------------------------------------------------------------------
Center   Atomic    Atomic        Coordinates (Angstroms)
Number   Number     Type        X        Y        Z
--------------------------------------------------------------------
   1      15        0      0.477047  -0.119951   0.018506
   2       8        0     -0.937974  -0.188677  -0.786827
   3       8        0      0.387939  -0.918942   1.292514
   4       8        0      1.540520  -0.407686  -1.008726
   5       6        0     -2.147664   0.020637  -0.049323
   6       1        0     -2.288444  -0.773370   0.689030
   7       1        0     -2.130554   0.994002   0.450862
   8       1        0     -2.963982  -0.001670  -0.771997
   9       8        0      0.556168   1.441978   0.490899
  10       1        0      0.740032   2.043100  -0.252421
--------------------------------------------------------------------
```

System:	model phosphodiester + choline
Stationary point:	isolated product2
Structure	
M06–2X/6–31+G(d) energy (in a.u.):	-935.106831072
Thermal correction to Gibbs Free Energy (in a.u.):	0.201423
Number of imaginary frequencies:	0
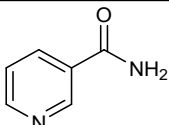
CARTESIAN COORDINATES

```
---------------------------------------------------------------------
Center   Atomic   Atomic        Coordinates (Angstroms)
Number   Number   Type        X        Y        Z
---------------------------------------------------------------------
   1       15       0      1.916596  -0.600678   0.010989
   2        8       0      2.492749   0.648576   0.880575
   3        8       0      2.992158  -1.183104  -0.864700
   4        8       0      1.148047  -1.449976   0.987797
   5        6       0      3.239982   1.661604   0.195501
   6        1       0      3.521821   2.403181   0.943407
   7        1       0      4.139368   1.234881  -0.256798
   8        1       0      2.624148   2.135251  -0.575542
   9        8       0      0.882819   0.143834  -1.020585
  10        6       0     -0.300768   0.729567  -0.474407
  11        6       0     -1.434301  -0.266222  -0.705045
  12        1       0     -0.158569   0.965830   0.584823
  13        1       0     -0.471486   1.660208  -1.019170
  14        7       0     -2.703734   0.047819   0.038929
  15        1       0     -1.689916  -0.292497  -1.767133
  16        1       0     -1.124918  -1.263481  -0.384103
  17        6       0     -3.768084  -0.877629  -0.460782
  18        6       0     -2.530434  -0.178331   1.507591
  19        6       0     -3.131408   1.458727  -0.207313
  20        1       0     -4.113366   1.598632   0.246354
  21        1       0     -2.412388   2.136937   0.252978
  22        1       0     -3.182323   1.621816  -1.285062
  23        1       0     -3.490829   0.005611   1.990981
  24        1       0     -2.216556  -1.211484   1.660975
  25        1       0     -1.784161   0.511792   1.898315
  26        1       0     -4.680745  -0.687825   0.104944
  27        1       0     -3.927862  -0.680402  -1.521363
  28        1       0     -3.431119  -1.903960  -0.308918
---------------------------------------------------------------------
```

System:	model NAD⁺ with unionized –OH group
Stationary point:	reactants
Structure:	
M06–2X/6–31+G(d) energy (in a.u.):	-838.155347938
Thermal correction to Gibbs Free Energy (in a.u.):	0.223398
Number of imaginary frequencies:	0
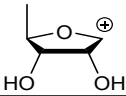
CARTESIAN COORDINATES

```
---------------------------------------------------------------------
Center   Atomic   Atomic        Coordinates (Angstroms)
Number   Number    Type       X        Y        Z
---------------------------------------------------------------------
   1       6       0     -0.936119  -0.441155  -0.896291
   2       8       0     -1.935102   0.444082  -1.290027
   3       6       0     -3.085115   0.362429  -0.406844
   4       6       0     -2.527970  -0.298502   0.850621
   5       6       0     -1.488928  -1.270890   0.278331
   6       1       0     -3.816184  -0.309823  -0.871450
   7       6       0     -3.673940   1.737376  -0.207834
   8       8       0     -3.574501  -0.903835   1.573570
   9       1       0     -2.010486   0.452797   1.462292
  10       8       0     -2.167346  -2.401486  -0.224057
  11       1       0     -0.713263  -1.554969   0.995987
  12       1       0     -0.612772  -1.065364  -1.732309
  13       7       0      0.295512   0.334829  -0.481686
  14       1       0     -1.508616  -3.056597  -0.507777
  15       1       0     -3.255937  -1.123387   2.464052
  16       1       0     -4.546089   1.661219   0.449249
  17       1       0     -2.945567   2.411788   0.253580
  18       1       0     -4.000776   2.159972  -1.162069
  19       6       0      1.445603  -0.361733  -0.390211
  20       6       0      2.606179   0.256995   0.033449
  21       6       0      2.562484   1.612598   0.371725
  22       6       0      1.369219   2.311038   0.248129
  23       6       0      0.234931   1.643885  -0.182386
  24       1       0      1.380479  -1.413432  -0.651599
  25       6       0      3.901297  -0.492456   0.186303
  26       1       0      3.463824   2.108706   0.717525
  27       1       0      1.301881   3.365980   0.484587
  28       1       0     -0.727931   2.123669  -0.303130
  29       8       0      4.710512  -0.134247   1.047669
  30       7       0      4.104883  -1.530900  -0.631629
  31       1       0      3.497747  -1.736729  -1.416332
  32       1       0      4.976577  -2.044961  -0.556596
---------------------------------------------------------------------
```

System:	model NAD⁺ with unionized –OH group
Stationary point:	isolated product1
Structure	
M06–2X/6–31+G(d) energy (in a.u.):	-416.850246687
Thermal correction to Gibbs Free Energy (in a.u.):	0.084827
Number of imaginary frequencies:	0

CARTESIAN COORDINATES

```
---------------------------------------------------------------------
Center   Atomic    Atomic          Coordinates (Angstroms)
Number   Number     Type       X        Y         Z
---------------------------------------------------------------------
   1       7        0      1.813075  -1.264302  -0.172773
   2       6        0      0.479670  -1.167063  -0.173511
   3       6        0     -0.205151   0.038228  -0.006732
   4       6        0      0.539957   1.206803   0.156266
   5       6        0      1.925588   1.117233   0.168639
   6       6        0      2.511872  -0.135450   0.003124
   7       1        0     -0.060009  -2.096283  -0.337740
   8       6        0     -1.699043   0.127456  -0.031422
   9       1        0      0.035881   2.160774   0.278526
  10       1        0      2.546343   1.996501   0.302979
  11       1        0      3.593320  -0.237758   0.008214
  12       8        0     -2.261746   1.184765  -0.352578
  13       7        0     -2.385038  -0.975500   0.301753
  14       1        0     -1.936865  -1.805600   0.668560
  15       1        0     -3.398312  -0.940384   0.299047
---------------------------------------------------------------------
```

System:	model NAD⁺ with unionized –OH group
Stationary point:	isolated product2
Structure	
M06–2X/6–31+G(d) energy (in a.u.):	-421.241570528
Thermal correction to Gibbs Free Energy (in a.u.):	0.112761
Number of imaginary frequencies:	0

CARTESIAN COORDINATES

```
---------------------------------------------------------------------
Center   Atomic   Atomic        Coordinates (Angstroms)
Number   Number    Type        X        Y        Z
---------------------------------------------------------------------
  1       6       0      -0.586253  -1.506359   0.304116
  2       8       0       0.551463  -1.451276  -0.208589
  3       6       0       1.018048  -0.035341  -0.392981
  4       6       0       0.019377   0.754471   0.456609
  5       6       0      -1.220388  -0.160366   0.527619
  6       1       0       0.864357   0.149175  -1.459159
  7       6       0       2.461469   0.037737   0.014439
  8       8       0      -0.208182   1.998722  -0.153648
  9       1       0       0.416740   0.869404   1.471410
 10       8       0      -2.037336   0.023440  -0.609850
 11       1       0      -1.776618  -0.093690   1.463136
 12       1       0      -1.032531  -2.489693   0.448438
 13       1       0      -2.912799  -0.364997  -0.437758
 14       1       0      -0.610371   2.597116   0.497614
 15       1       0       2.787808   1.075897  -0.101594
 16       1       0       2.582253  -0.255498   1.060826
 17       1       0       3.080071  -0.595649  -0.625031
---------------------------------------------------------------------
```

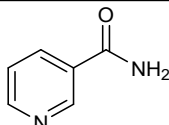| System:	model NAD$^+$ with ionized –OH group
Stationary point:	reactants
Structure:	
M06–2X/6–31+G(d) energy (in a.u.):	-837.677710983
Thermal correction to Gibbs Free Energy (in a.u.):	0.209453
Number of imaginary frequencies:	0

CARTESIAN COORDINATES

```
---------------------------------------------------------------------
Center   Atomic   Atomic        Coordinates (Angstroms)
Number   Number    Type       X        Y        Z
---------------------------------------------------------------------
   1       6       0      -0.961599  -0.463798  -0.945780
   2       8       0      -1.982318   0.416918  -1.300561
   3       6       0      -3.092312   0.317890  -0.367613
   4       6       0      -2.472852  -0.352131   0.850809
   5       6       0      -1.488184  -1.364013   0.209350
   6       1       0      -3.837250  -0.356954  -0.806290
   7       6       0      -3.687293   1.686979  -0.139952
   8       8       0      -3.492698  -0.930997   1.640655
   9       1       0      -1.920492   0.397513   1.438640
  10       8       0      -2.098897  -2.484321  -0.289186
  11       1       0      -0.657228  -1.583209   0.908569
  12       1       0      -0.634734  -1.050226  -1.806436
  13       7       0       0.262329   0.332042  -0.527719
  14       1       0      -3.080868  -1.359805   2.408494
  15       1       0      -4.540977   1.599112   0.539929
  16       1       0      -2.954025   2.365198   0.308636
  17       1       0      -4.044147   2.118154  -1.080133
  18       6       0       1.413487  -0.358718  -0.419941
  19       6       0       2.565346   0.260748   0.028120
  20       6       0       2.510851   1.612984   0.377818
  21       6       0       1.316456   2.306372   0.239812
  22       6       0       0.192870   1.636748  -0.216575
  23       1       0       1.357225  -1.408711  -0.690394
  24       6       0       3.860055  -0.484617   0.197661
  25       1       0       3.403603   2.109407   0.744583
  26       1       0       1.239835   3.358756   0.485075
  27       1       0      -0.770258   2.113148  -0.347974
  28       8       0       4.659443  -0.123451   1.067751
  29       7       0       4.078296  -1.523972  -0.615631
  30       1       0       3.480259  -1.738396  -1.404826
  31       1       0       4.949486  -2.036314  -0.525939
---------------------------------------------------------------------
```

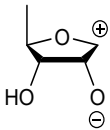| System:	model NAD⁺ with ionized –OH group
Stationary point:	transition state for the N–C cleavage
M06–2X/6–31+G(d) energy (in a.u.):	-837.642747318
Thermal correction to Gibbs Free Energy (in a.u.):	0.203796
Number of imaginary frequencies:	1 (–235i)

CARTESIAN COORDINATES

```
----------------------------------------------------------------------
Center   Atomic    Atomic        Coordinates (Angstroms)
Number   Number     Type        X        Y        Z
----------------------------------------------------------------------
   1       6        0      -2.051378   0.436836  -1.244193
   2       8        0      -2.388841   1.224359  -0.285277
   3       6        0      -2.466608   0.482449   0.991627
   4       6        0      -1.990597  -0.933192   0.639564
   5       6        0      -2.139018  -0.994132  -0.896946
   6       1        0      -3.529479   0.473264   1.245627
   7       6        0      -1.644569   1.212510   2.023969
   8       8        0      -2.795886  -1.860926   1.339452
   9       1        0      -0.936290  -1.056007   0.919556
  10       8        0      -3.448575  -1.125046  -1.346047
  11       1        0      -1.403890  -1.651741  -1.379129
  12       1        0      -2.028065   0.855035  -2.243859
  13       7        0       0.305225   0.751310  -1.044815
  14       1        0      -2.401690  -2.743127   1.243578
  15       1        0      -1.733341   0.680041   2.976283
  16       1        0      -0.588505   1.234739   1.734385
  17       1        0      -2.006245   2.234829   2.162638
  18       6        0       1.193618  -0.203759  -0.759869
  19       6        0       2.421579   0.065548  -0.153454
  20       6        0       2.722792   1.388716   0.173171
  21       6        0       1.804338   2.385250  -0.133238
  22       6        0       0.604542   2.017527  -0.735714
  23       1        0       0.893008  -1.219948  -1.006566
  24       6        0       3.404421  -1.010342   0.194249
  25       1        0       3.666144   1.625305   0.655946
  26       1        0       2.003252   3.426184   0.096695
  27       1        0      -0.152922   2.761870  -0.970939
  28       8        0       4.225631  -0.837564   1.106078
  29       7        0       3.347380  -2.146545  -0.514575
  30       1        0       2.751942  -2.255779  -1.325608
  31       1        0       4.004497  -2.889069  -0.301525
----------------------------------------------------------------------
```

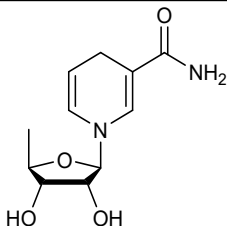| System:	model NAD⁺ with ionized –OH group
Stationary point:	isolated product1
Structure	
M06–2X/6–31+G(d) energy (in a.u.):	-416.850246687
Thermal correction to Gibbs Free Energy (in a.u.):	0.084827
Number of imaginary frequencies:	0

CARTESIAN COORDINATES

```
---------------------------------------------------------------------
Center   Atomic    Atomic           Coordinates (Angstroms)
Number   Number    Type         X          Y          Z
---------------------------------------------------------------------
   1        7         0       1.813075   -1.264302   -0.172773
   2        6         0       0.479670   -1.167063   -0.173511
   3        6         0      -0.205151    0.038228   -0.006732
   4        6         0       0.539957    1.206803    0.156266
   5        6         0       1.925588    1.117233    0.168639
   6        6         0       2.511872   -0.135450    0.003124
   7        1         0      -0.060009   -2.096283   -0.337740
   8        6         0      -1.699043    0.127456   -0.031422
   9        1         0       0.035881    2.160774    0.278526
  10        1         0       2.546343    1.996501    0.302979
  11        1         0       3.593320   -0.237758    0.008214
  12        8         0      -2.261746    1.184765   -0.352578
  13        7         0      -2.385038   -0.975500    0.301753
  14        1         0      -1.936865   -1.805600    0.668560
  15        1         0      -3.398312   -0.940384    0.299047
---------------------------------------------------------------------
```

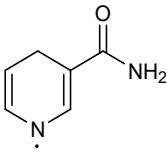| System:	model NAD⁺ with unionized –OH group
Stationary point:	isolated product2
Structure	
M06–2X/6–31+G(d) energy (in a.u.):	-420.821263358
Thermal correction to Gibbs Free Energy (in a.u.):	0.101384
Number of imaginary frequencies:	0

Note: The "Structure" row contains a chemical structure diagram showing a ring with O⊕ at top, HO and O⊖ groups at bottom.

CARTESIAN COORDINATES

```
---------------------------------------------------------------------
Center   Atomic   Atomic        Coordinates (Angstroms)
Number   Number    Type        X        Y        Z
---------------------------------------------------------------------
   1       6       0      -1.237961  -1.021771   0.245338
   2       8       0       0.032003  -1.477468  -0.086463
   3       6       0       0.865996  -0.320907  -0.329998
   4       6       0       0.200527   0.849114   0.425360
   5       6       0      -1.231936   0.396695   0.575004
   6       1       0       0.825332  -0.089590  -1.400291
   7       6       0       2.281182  -0.626293   0.098818
   8       8       0       0.384565   2.026642  -0.340397
   9       1       0       0.635538   0.967586   1.426067
  10       8       0      -1.785701  -0.090929  -0.673571
  11       1       0      -1.930456   0.881433   1.248936
  12       1       0      -1.895695  -1.793504   0.626313
  13       1       0       0.138607   2.791777   0.204036
  14       1       0       2.909600   0.253659  -0.072939
  15       1       0       2.312867  -0.878638   1.163431
  16       1       0       2.690417  -1.459716  -0.479236
---------------------------------------------------------------------
```

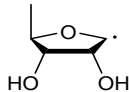| System:	model NADH with unionized –OH group
Stationary point:	reactants
Structure:	
M06–2X/6–31+G(d) energy (in a.u.):	-838.891470167
Thermal correction to Gibbs Free Energy (in a.u.):	0.230970
Number of imaginary frequencies:	0

CARTESIAN COORDINATES

```
---------------------------------------------------------------------
Center   Atomic    Atomic          Coordinates (Angstroms)
Number   Number    Type       X        Y        Z
---------------------------------------------------------------------
   1       6       0      -0.880522  -0.518015  -0.647465
   2       8       0      -1.854294   0.216855  -1.373213
   3       6       0      -3.138098   0.108798  -0.740341
   4       6       0      -2.794863  -0.059773   0.737309
   5       6       0      -1.542878  -0.944653   0.687525
   6       1       0      -3.640899  -0.803245  -1.092818
   7       6       0      -3.959862   1.332891  -1.066722
   8       8       0      -3.897349  -0.611491   1.424356
   9       1       0      -2.527748   0.916958   1.160423
  10       8       0      -1.960436  -2.297684   0.632358
  11       1       0      -0.865285  -0.782265   1.533295
  12       1       0      -0.588616  -1.414186  -1.204941
  13       7       0       0.312623   0.299683  -0.512192
  14       1       0      -1.169644  -2.860865   0.612483
  15       1       0      -3.729132  -0.559506   2.379013
  16       1       0      -4.928255   1.270323  -0.560416
  17       1       0      -3.442569   2.237446  -0.728967
  18       1       0      -4.139897   1.405861  -2.143163
  19       6       0       1.534158  -0.330032  -0.502870
  20       6       0       2.661034   0.226372  -0.002336
  21       6       0       2.658310   1.576925   0.684324
  22       6       0       1.269925   2.162086   0.676330
  23       6       0       0.216035   1.550133   0.128946
  24       1       0       1.521179  -1.326472  -0.936562
  25       6       0       3.953870  -0.476244  -0.058057
  26       1       0       3.026098   1.484426   1.715329
  27       1       0       1.118656   3.137743   1.128280
  28       1       0      -0.772326   1.997236   0.111259
  29       8       0       4.903522  -0.094054   0.655781
  30       7       0       4.101129  -1.548760  -0.871763
  31       1       0       3.462186  -1.736560  -1.632864
  32       1       0       5.023880  -1.962745  -0.933407
  33       1       0       3.361906   2.259457   0.186613
---------------------------------------------------------------------
```

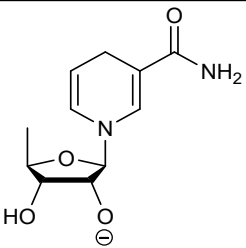| System:	model NADH with unionized –OH group
Stationary point:	isolated product1
Structure	
M06–2X/6–31+G(d) energy (in a.u.):	-417.390836509
Thermal correction to Gibbs Free Energy (in a.u.):	0.091254
Number of imaginary frequencies:	0

CARTESIAN COORDINATES

```
---------------------------------------------------------------------
Center   Atomic   Atomic        Coordinates (Angstroms)
Number   Number    Type        X        Y        Z
---------------------------------------------------------------------
  1        7        0        1.788174  -1.340301  -0.107579
  2        6        0        0.438867  -1.198152  -0.105508
  3        6        0       -0.226950  -0.002212   0.000649
  4        6        0        0.533695   1.277376   0.089934
  5        6        0        1.999690   1.055011   0.098963
  6        6        0        2.526833  -0.201154   0.003507
  7        1        0       -0.106808  -2.131864  -0.213800
  8        6        0       -1.707683   0.108601  -0.018601
  9        1        0        0.257793   1.944471  -0.745989
 10        1        0        2.658351   1.914070   0.177925
 11        1        0        3.603646  -0.342492   0.009148
 12        8        0       -2.242739   1.215496  -0.209911
 13        7        0       -2.443722  -1.000996   0.171696
 14        1        0       -2.042002  -1.890138   0.437106
 15        1        0       -3.453661  -0.916607   0.170671
 16        1        0        0.226709   1.850844   0.981738
---------------------------------------------------------------------
```

System:	model NADH with unionized –OH group
Stationary point:	isolated product2
Structure	
M06–2X/6–31+G(d) energy (in a.u.):	-421.391818573
Thermal correction to Gibbs Free Energy (in a.u.):	0.107993
Number of imaginary frequencies:	0

CARTESIAN COORDINATES

```
---------------------------------------------------------------------
Center   Atomic   Atomic        Coordinates (Angstroms)
Number   Number    Type       X        Y        Z
---------------------------------------------------------------------
  1        6        0      -0.648953  -1.519227   0.432421
  2        8        0       0.593514  -1.487519  -0.154808
  3        6        0       0.969953  -0.110540  -0.389950
  4        6        0       0.010181   0.690898   0.492989
  5        6        0      -1.263012  -0.169314   0.474726
  6        1        0       0.756695   0.115868  -1.442449
  7        6        0       2.435367   0.078049  -0.080944
  8        8        0      -0.124371   1.995140  -0.029779
  9        1        0       0.394091   0.721392   1.520758
 10        8        0      -1.995199   0.162682  -0.720675
 11        1        0      -1.902147  -0.011657   1.348687
 12        1        0      -1.143690  -2.481907   0.437157
 13        1        0      -2.729010  -0.468047  -0.802398
 14        1        0      -0.593829   2.543281   0.619575
 15        1        0       2.710140   1.124805  -0.246068
 16        1        0       2.640614  -0.179372   0.963267
 17        1        0       3.054368  -0.545984  -0.731881
---------------------------------------------------------------------
```

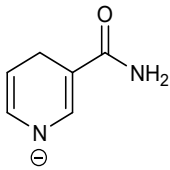| System:	model NADH with ionized –OH group
Stationary point:	reactants
Structure:	
M06–2X/6–31+G(d) energy (in a.u.):	-838.415609962
Thermal correction to Gibbs Free Energy (in a.u.):	0.216784
Number of imaginary frequencies:	0

CARTESIAN COORDINATES

```
---------------------------------------------------------------------
Center   Atomic   Atomic         Coordinates (Angstroms)
Number   Number    Type       X         Y         Z
---------------------------------------------------------------------
   1       6        0      0.914619  -0.551534  -0.292443
   2       8        0      1.395198  -0.508435   1.057372
   3       6        0      2.827661  -0.516403   1.019809
   4       6        0      3.152936   0.376683  -0.177577
   5       6        0      2.048273  -0.003622  -1.208154
   6       1        0      3.178485  -1.536857   0.797852
   7       6        0      3.367078  -0.044817   2.349336
   8       8        0      4.424703   0.116588  -0.735562
   9       1        0      3.094175   1.430633   0.122061
  10       8        0      2.538793  -0.953229  -2.091340
  11       1        0      1.683670   0.898380  -1.730991
  12       1        0      0.706661  -1.588776  -0.575332
  13       7        0     -0.334630   0.170285  -0.356212
  14       1        0      4.180235  -0.496164  -1.479012
  15       1        0      4.461023  -0.014417   2.311180
  16       1        0      2.997788   0.962783   2.570564
  17       1        0      3.070589  -0.717446   3.160104
  18       6        0     -1.520794  -0.501553  -0.201850
  19       6        0     -2.712436   0.120889  -0.039539
  20       6        0     -2.828589   1.631040  -0.074643
  21       6        0     -1.460319   2.252370   0.056139
  22       6        0     -0.331713   1.552512  -0.091721
  23       1        0     -1.424638  -1.582581  -0.248057
  24       6        0     -3.965479  -0.636164   0.094155
  25       1        0     -3.315739   1.962557  -1.004544
  26       1        0     -1.387026   3.315075   0.265361
  27       1        0      0.651917   2.002770  -0.002653
  28       8        0     -5.063894  -0.049677  -0.001236
  29       7        0     -3.926471  -1.975408   0.296811
  30       1        0     -3.086825  -2.448508   0.602293
  31       1        0     -4.807029  -2.449762   0.456836
  32       1        0     -3.481399   1.979793   0.735180
---------------------------------------------------------------------
```

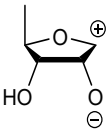| System:	model NADH with ionized –OH group
Stationary point:	transition state for the N–C cleavage
M06–2X/6–31+G(d) energy (in a.u.):	-838.342358175
Thermal correction to Gibbs Free Energy (in a.u.):	0.212355
Number of imaginary frequencies:	1 (–472*i*)

CARTESIAN COORDINATES

```
---------------------------------------------------------------------
Center  Atomic   Atomic         Coordinates (Angstroms)
Number  Number    Type       X        Y         Z
---------------------------------------------------------------------
   1      6       0      1.672868  -0.862461  -1.099969
   2      8       0      1.252766  -1.454541  -0.021251
   3      6       0      1.738598  -0.743517   1.173467
   4      6       0      2.557025   0.453315   0.635342
   5      6       0      2.683362   0.154526  -0.865199
   6      1       0      2.399679  -1.453668   1.676361
   7      6       0      0.552976  -0.374019   2.031356
   8      8       0      3.833612   0.544987   1.237028
   9      1       0      2.035333   1.395685   0.822882
  10      8       0      3.624670  -0.862148  -1.094054
  11      1       0      2.734450   1.025643  -1.524673
  12      1       0      1.410763  -1.304455  -2.050917
  13      7       0     -0.273598   0.613304  -1.515928
  14      1       0      4.375660  -0.136924   0.792098
  15      1       0      0.917717   0.095429   2.950817
  16      1       0     -0.090961   0.339236   1.505548
  17      1       0     -0.029900  -1.260072   2.299390
  18      6       0     -1.309107  -0.131036  -1.121840
  19      6       0     -2.320903   0.231730  -0.241030
  20      6       0     -2.344703   1.617796   0.379549
  21      6       0     -1.127096   2.389504  -0.069230
  22      6       0     -0.222307   1.878973  -0.927030
  23      1       0     -1.330574  -1.128509  -1.567372
  24      6       0     -3.381287  -0.665116   0.126011
  25      1       0     -3.267520   2.160716   0.113597
  26      1       0     -0.979411   3.395244   0.318298
  27      1       0      0.639747   2.478221  -1.220346
  28      8       0     -4.324189  -0.292102   0.877919
  29      7       0     -3.428389  -1.953756  -0.371406
  30      1       0     -2.561585  -2.398735  -0.646123
  31      1       0     -4.058349  -2.565974   0.135004
  32      1       0     -2.372560   1.553594   1.481071
---------------------------------------------------------------------
```

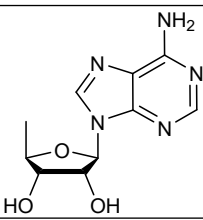| System:	model NADH with ionized –OH group
Stationary point:	isolated product1
Structure	
M06–2X/6–31+G(d) energy (in a.u.):	-417.540042307
Thermal correction to Gibbs Free Energy (in a.u.):	0.093437
Number of imaginary frequencies:	0

CARTESIAN COORDINATES

```
---------------------------------------------------------------------
Center   Atomic    Atomic          Coordinates (Angstroms)
Number   Number     Type       X        Y        Z
---------------------------------------------------------------------
   1       7        0      -1.761124  -1.389783   0.044934
   2       6        0      -0.446860  -1.195034   0.047599
   3       6        0       0.233845   0.025569   0.008720
   4       6        0      -0.533763   1.336507   0.012938
   5       6        0      -2.013277   1.044732  -0.051258
   6       6        0      -2.506950  -0.208260  -0.027130
   7       1        0       0.139756  -2.114355   0.094432
   8       6        0       1.659487   0.106051   0.002751
   9       1        0      -0.297662   1.938971   0.907722
  10       1        0      -2.704491   1.882955  -0.109722
  11       1        0      -3.584585  -0.359172  -0.067626
  12       8        0       2.259901   1.220647   0.036853
  13       7        0       2.444729  -1.038405   0.013889
  14       1        0       2.056569  -1.882517  -0.389165
  15       1        0       3.402959  -0.867438  -0.271167
  16       1        0      -0.231883   1.976302  -0.832775
---------------------------------------------------------------------
```

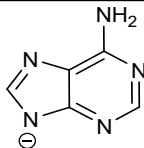| System:	model NADH with ionized –OH group
Stationary point:	isolated product2
Structure	
M06–2X/6–31+G(d) energy (in a.u.):	-420.821263358
Thermal correction to Gibbs Free Energy (in a.u.):	0.101384
Number of imaginary frequencies:	0

CARTESIAN COORDINATES

```
---------------------------------------------------------------------
Center  Atomic   Atomic        Coordinates (Angstroms)
Number  Number    Type        X        Y        Z
---------------------------------------------------------------------
   1      6       0      -1.237961  -1.021771   0.245338
   2      8       0       0.032003  -1.477468  -0.086463
   3      6       0       0.865996  -0.320907  -0.329998
   4      6       0       0.200527   0.849114   0.425360
   5      6       0      -1.231936   0.396695   0.575004
   6      1       0       0.825332  -0.089590  -1.400291
   7      6       0       2.281182  -0.626293   0.098818
   8      8       0       0.384565   2.026642  -0.340397
   9      1       0       0.635538   0.967586   1.426067
  10      8       0      -1.785701  -0.090929  -0.673571
  11      1       0      -1.930456   0.881433   1.248936
  12      1       0      -1.895695  -1.793504   0.626313
  13      1       0       0.138607   2.791777   0.204036
  14      1       0       2.909600   0.253659  -0.072939
  15      1       0       2.312867  -0.878638   1.163431
  16      1       0       2.690417  -1.459716  -0.479236
---------------------------------------------------------------------
```

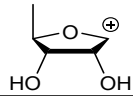| System:	model NADH/NAD⁺ with unionized –OH group
Stationary point:	reactants
Structure:	
M06–2X/6–31+G(d) energy (in a.u.):	-888.050827328
Thermal correction to Gibbs Free Energy (in a.u.):	0.206759
Number of imaginary frequencies:	0

CARTESIAN COORDINATES

```
--------------------------------------------------------------------
Center  Atomic   Atomic        Coordinates (Angstroms)
Number  Number    Type         X        Y        Z
--------------------------------------------------------------------
  1       8       0       2.129540  -1.052558  -0.920715
  2       8       0       3.938369   1.146376  -0.420866
  3       8       0       1.553613   2.258911   0.161866
  4       7       0      -0.130123  -0.533617  -0.560176
  5       7       0      -1.837318  -1.962778  -0.287394
  6       7       0      -1.283230   1.573479  -0.151628
  7       7       0      -3.619761   1.241313   0.311257
  8       7       0      -4.630784  -0.843571   0.382832
  9       6       0       3.143299   0.468795   0.539991
 10       6       0       1.676988   0.874800   0.399873
 11       6       0       3.095619  -1.006107   0.162224
 12       6       0       1.215209   0.004157  -0.790432
 13       6       0       2.680648  -1.929053   1.293720
 14       6       0      -1.225896   0.233382  -0.272312
 15       6       0      -0.555059  -1.835424  -0.548083
 16       6       0      -2.274846  -0.663922  -0.112952
 17       6       0      -3.531640  -0.099177   0.192224
 18       6       0      -2.516175   1.981433   0.141174
 19       1       0       3.526101   0.630469   1.553165
 20       1       0       1.128248   0.586457   1.304404
 21       1       0       4.048759  -1.323345  -0.267808
 22       1       0       1.189115   0.588951  -1.715722
 23       1       0       1.719314  -1.631336   1.726055
 24       1       0       3.437968  -1.915388   2.083684
 25       1       0       3.712521   2.091940  -0.384175
 26       1       0       0.595232   2.436757   0.058954
 27       1       0       0.127419  -2.650527  -0.742765
 28       1       0      -2.649298   3.052950   0.257847
 29       1       0      -4.612058  -1.841672   0.218714
 30       1       0      -5.524752  -0.391820   0.529564
 31       1       0       2.588893  -2.952343   0.919004
--------------------------------------------------------------------
```

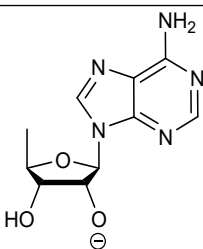| System:	model NADH/NAD⁺ with unionized –OH group
Stationary point:	isolated product1
Structure	
M06–2X/6–31+G(d) energy (in a.u.):	-466.718510486
Thermal correction to Gibbs Free Energy (in a.u.):	0.069389
Number of imaginary frequencies:	0

CARTESIAN COORDINATES

```
---------------------------------------------------------------------
Center   Atomic   Atomic        Coordinates (Angstroms)
Number   Number    Type        X        Y        Z
---------------------------------------------------------------------
  1        7        0      -2.128357   0.685038   0.005808
  2        7        0      -1.232308  -1.440063  -0.005378
  3        7        0      -0.026958   1.920327   0.004387
  4        7        0       1.920055   0.500398  -0.001942
  5        7        0       1.817648  -1.827731  -0.066160
  6        6        0      -0.772314   0.783890   0.001953
  7        6        0      -2.316642  -0.654882   0.001046
  8        6        0      -0.219741  -0.510300  -0.005157
  9        6        0       1.178613  -0.618448  -0.006161
 10        6        0       1.275057   1.685608   0.002153
 11        1        0      -3.315733  -1.077119   0.002638
 12        1        0       1.923411   2.558174   0.005610
 13        1        0       1.284259  -2.632399   0.242372
 14        1        0       2.787665  -1.829640   0.229376
---------------------------------------------------------------------
```

System:	model NADH/NAD⁺ with unionized –OH group
Stationary point:	isolated product2
Structure	
M06–2X/6–31+G(d) energy (in a.u.):	-421.241570528
Thermal correction to Gibbs Free Energy (in a.u.):	0.112761
Number of imaginary frequencies:	0

CARTESIAN COORDINATES

```
---------------------------------------------------------------------
Center   Atomic   Atomic        Coordinates (Angstroms)
Number   Number    Type        X         Y         Z
---------------------------------------------------------------------
  1        6        0      -0.648953  -1.519227   0.432421
  2        8        0       0.593514  -1.487519  -0.154808
  3        6        0       0.969953  -0.110540  -0.389950
  4        6        0       0.010181   0.690898   0.492989
  5        6        0      -1.263012  -0.169314   0.474726
  6        1        0       0.756695   0.115868  -1.442449
  7        6        0       2.435367   0.078049  -0.080944
  8        8        0      -0.124371   1.995140  -0.029779
  9        1        0       0.394091   0.721392   1.520758
 10        8        0      -1.995199   0.162682  -0.720675
 11        1        0      -1.902147  -0.011657   1.348687
 12        1        0      -1.143690  -2.481907   0.437157
 13        1        0      -2.729010  -0.468047  -0.802398
 14        1        0      -0.593829   2.543281   0.619575
 15        1        0       2.710140   1.124805  -0.246068
 16        1        0       2.640614  -0.179372   0.963267
 17        1        0       3.054368  -0.545984  -0.731881
---------------------------------------------------------------------
```

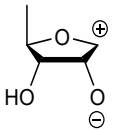| System:	model NADH/NAD⁺ with ionized –OH group
Stationary point:	reactants
Structure:	
M06–2X/6–31+G(d) energy (in a.u.):	-887.570719581
Thermal correction to Gibbs Free Energy (in a.u.):	0.194139
Number of imaginary frequencies:	0
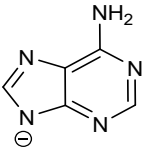
CARTESIAN COORDINATES

```
---------------------------------------------------------------------
Center   Atomic    Atomic           Coordinates (Angstroms)
Number   Number     Type        X         Y         Z
---------------------------------------------------------------------
   1       8        0       2.102668  -0.886054  -1.072523
   2       8        0       4.148449   1.013875  -0.024215
   3       8        0       1.997328   2.332991   0.106625
   4       7        0      -0.121063  -0.375998  -0.549656
   5       7        0      -1.762201  -1.886483  -0.255863
   6       7        0      -1.405265   1.675670  -0.192915
   7       7        0      -3.717411   1.212815   0.299584
   8       7        0      -4.591283  -0.933225   0.454113
   9       6        0       3.153933   0.277390   0.665348
  10       6        0       1.790406   1.000527   0.398692
  11       6        0       2.973265  -1.104754   0.067487
  12       6        0       1.225735   0.179760  -0.805585
  13       6        0       2.380607  -2.100042   1.052048
  14       6        0      -1.255636   0.340738  -0.266410
  15       6        0      -0.491057  -1.694009  -0.531615
  16       6        0      -2.257951  -0.609855  -0.085475
  17       6        0      -3.543315  -0.118042   0.215625
  18       6        0      -2.658588   2.012309   0.091825
  19       1        0       3.390740   0.227013   1.735065
  20       1        0       1.125864   0.839364   1.265583
  21       1        0       3.908060  -1.490154  -0.348465
  22       1        0       1.151072   0.812600  -1.694323
  23       1        0       1.472530  -1.709639   1.525962
  24       1        0       3.111924  -2.308343   1.839585
  25       1        0       3.671764   1.874951  -0.182409
  26       1        0       0.220405  -2.478848  -0.741377
  27       1        0      -2.861508   3.076698   0.166458
  28       1        0      -4.521665  -1.914105   0.214353
  29       1        0      -5.518963  -0.528524   0.492034
  30       1        0       2.138387  -3.041104   0.549967
---------------------------------------------------------------------
```

System:	model NADH/NAD⁺ with ionized –OH group
Stationary point:	transition state for the N–C cleavage
M06–2X/6–31+G(d) energy (in a.u.):	-887.516822995
Thermal correction to Gibbs Free Energy (in a.u.):	0.187214
Number of imaginary frequencies:	1 (−277i)

CARTESIAN COORDINATES

```
---------------------------------------------------------------------
Center   Atomic   Atomic        Coordinates (Angstroms)
Number   Number    Type       X        Y        Z
---------------------------------------------------------------------
   1        8        0     -2.122314   1.463169   0.272959
   2        8        0     -2.877037  -1.856319   1.120884
   3        8        0     -3.814697  -0.354572  -0.922457
   4        7        0      0.267126   0.881191  -1.425186
   5        7        0      1.879407   1.903508  -0.137768
   6        7        0      1.114191  -1.401771  -1.257427
   7        7        0      3.089396  -1.586790   0.111513
   8        7        0      4.084566   0.224211   1.189205
   9        6        0     -1.983728  -0.913856   0.564006
  10        6        0     -2.428964  -0.527187  -0.859503
  11        6        0     -1.999478   0.428696   1.325854
  12        6        0     -2.204728   0.919223  -0.886654
  13        6        0     -0.766159   0.725812   2.140675
  14        6        0      1.138308  -0.070325  -0.990027
  15        6        0      0.769189   2.012253  -0.872972
  16        6        0      2.125411   0.551125  -0.202987
  17        6        0      3.118164  -0.267248   0.356958
  18        6        0      2.101135  -2.062680  -0.673739
  19        1        0     -0.981321  -1.350962   0.574734
  20        1        0     -1.981990  -1.123522  -1.661078
  21        1        0     -2.915127   0.525333   1.913662
  22        1        0     -2.328447   1.575525  -1.739753
  23        1        0      0.134831   0.627498   1.525523
  24        1        0     -0.708394   0.000788   2.958949
  25        1        0     -3.752498  -1.614682   0.753664
  26        1        0      0.281616   2.969955  -1.025237
  27        1        0      2.132759  -3.135394  -0.847808
  28        1        0      4.276451   1.217104   1.123601
  29        1        0      4.905104  -0.358476   1.312464
  30        1        0     -0.808287   1.731293   2.568174
---------------------------------------------------------------------
```

System:	model NADH/NAD⁺ with ionized –OH group
Stationary point:	isolated product1
Structure	
M06–2X/6–31+G(d) energy (in a.u.):	-466.718510486
Thermal correction to Gibbs Free Energy (in a.u.):	0.069389
Number of imaginary frequencies:	0

CARTESIAN COORDINATES

```
---------------------------------------------------------------------
Center   Atomic   Atomic        Coordinates (Angstroms)
Number   Number    Type       X        Y        Z
---------------------------------------------------------------------
  1        7        0     -2.128357   0.685038   0.005808
  2        7        0     -1.232308  -1.440063  -0.005378
  3        7        0     -0.026958   1.920327   0.004387
  4        7        0      1.920055   0.500398  -0.001942
  5        7        0      1.817648  -1.827731  -0.066160
  6        6        0     -0.772314   0.783890   0.001953
  7        6        0     -2.316642  -0.654882   0.001046
  8        6        0     -0.219741  -0.510300  -0.005157
  9        6        0      1.178613  -0.618448  -0.006161
 10        6        0      1.275057   1.685608   0.002153
 11        1        0     -3.315733  -1.077119   0.002638
 12        1        0      1.923411   2.558174   0.005610
 13        1        0      1.284259  -2.632399   0.242372
 14        1        0      2.787665  -1.829640   0.229376
---------------------------------------------------------------------
```

System:	model NADH/NAD$^+$ with ionized –OH group
Stationary point:	isolated product2
Structure	
M06–2X/6–31+G(d) energy (in a.u.):	-420.821263358
Thermal correction to Gibbs Free Energy (in a.u.):	0.101384
Number of imaginary frequencies:	0

CARTESIAN COORDINATES

```
---------------------------------------------------------------------
Center   Atomic    Atomic         Coordinates (Angstroms)
Number   Number    Type       X         Y         Z
---------------------------------------------------------------------
   1       6        0     -1.237961  -1.021771   0.245338
   2       8        0      0.032003  -1.477468  -0.086463
   3       6        0      0.865996  -0.320907  -0.329998
   4       6        0      0.200527   0.849114   0.425360
   5       6        0     -1.231936   0.396695   0.575004
   6       1        0      0.825332  -0.089590  -1.400291
   7       6        0      2.281182  -0.626293   0.098818
   8       8        0      0.384565   2.026642  -0.340397
   9       1        0      0.635538   0.967586   1.426067
  10       8        0     -1.785701  -0.090929  -0.673571
  11       1        0     -1.930456   0.881433   1.248936
  12       1        0     -1.895695  -1.793504   0.626313
  13       1        0      0.138607   2.791777   0.204036
  14       1        0      2.909600   0.253659  -0.072939
  15       1        0      2.312867  -0.878638   1.163431
  16       1        0      2.690417  -1.459716  -0.479236
---------------------------------------------------------------------
```

Cartesian coordinates and total Gibbs Free energies for various stationary points identified through QM/MM ONIOM calculations at the M06-2X/6-31+G(d):AMBER level of theory

CHEMICAL REACTION: Cleavage of the C–N$_{PYRIDINE}$ bond in the NAD$^+$ coenzyme

TOTAL GIBBS FREE ENERGY (a.u.)		
REACTIVE COMPLEX	**TRANSITION STATE**	**PRODUCT COMPLEX**
−798.312805	−798.281956	−798.3227816
	NImag = 1, −139 cm^{-1}	

GEOMETRIES								
REACTIVE COMPLEX			**TRANSITION STATE**			**PRODUCT COMPLEX**		
15	1.158906	-4.466781	-0.613938	15	1.052589	-4.333254	-0.624380	15	1.097918	-4.454181	-0.672309
15	-1.503433	-4.239421	0.158020	15	-1.608746	-4.112854	0.186619	15	-1.556611	-4.359614	0.189228
8	3.079527	-1.382112	-1.750458	8	3.104199	-1.368334	-1.804004	8	3.075097	-1.466887	-1.839530
8	-3.053229	-1.181891	0.677177	8	-3.613954	-1.216940	0.846292	8	-3.731245	-1.299147	0.488292
8	6.063731	-2.409086	-1.513972	8	6.043847	-2.427954	-1.489596	8	6.039303	-2.490264	-1.536493
8	6.251760	0.077080	-1.079228	8	6.266176	0.064418	-1.063187	8	6.235512	0.012584	-1.141336
8	-6.055287	-1.647600	-0.086121	8	-6.362184	-1.959439	-0.322142	8	-6.502708	-2.806303	-0.073373
8	-5.732517	0.928022	-0.365021	8	-6.368432	0.465238	0.027561	8	-5.771846	-0.102568	0.474351
8	1.425060	-3.044795	0.082167	8	1.355611	-2.901826	0.036066	8	1.356719	-3.024469	0.014407
8	-1.430145	-2.996987	-0.863505	8	-1.546262	-2.755225	-0.681734	8	-1.690538	-3.109062	-0.816185
8	-0.149878	-5.024636	0.043095	8	-0.236254	-4.868317	0.086507	8	-0.164446	-5.063167	0.021160
8	1.237604	-4.514976	-2.102325	8	1.108053	-4.413014	-2.112538	8	1.141121	-4.489758	-2.160440
8	-2.633197	-5.144162	-0.194831	8	-2.700309	-5.022438	-0.258574	8	-2.606730	-5.366709	-0.117924
8	2.240529	-5.393253	-0.175119	8	2.134232	-5.267127	-0.200735	8	2.219727	-5.351688	-0.277487
8	-1.785874	-3.849975	1.565790	8	-1.934194	-3.828659	1.608128	8	-1.827142	-4.008739	1.601018
8	1.448264	2.642288	2.545586	8	1.427934	2.600001	2.432861	8	1.895522	3.382558	3.204100
7	2.982568	1.002698	-1.218067	7	2.999849	1.013957	-1.271721	7	2.975678	0.926896	-1.397856
7	-2.744497	1.124831	0.928756	7	-2.705308	1.212403	0.489372	7	-1.810649	2.523252	0.258605
7	1.087912	2.357509	-1.171997	7	1.105495	2.367828	-1.283667	7	1.092307	2.293412	-1.505692
7	4.581576	2.645543	-0.332191	7	4.589777	2.681631	-0.419452	7	4.544267	2.601854	-0.515499
7	3.500264	4.829338	0.246243	7	3.508618	4.887937	0.066607	7	3.470541	4.834674	-0.161156
7	1.326646	5.193886	-0.188944	7	1.331141	5.232374	-0.334414	7	1.321349	5.181159	-0.676845
7	1.311848	0.399938	2.187497	7	1.192872	0.360842	2.155689	7	1.620305	1.251132	2.458796
6	5.063770	-1.974127	-0.560493	6	5.040721	-1.967949	-0.550602	6	5.034706	-2.029219	-0.599740
6	4.981252	-0.432334	-0.610738	6	4.980482	-0.425150	-0.617089	6	4.956378	-0.489433	-0.690306
6	3.630205	-2.439097	-0.912296	6	3.604735	-2.410631	-0.918554	6	3.602348	-2.496234	-0.956133
6	3.814917	-0.138646	-1.603582	6	3.839481	-0.127487	-1.638182	6	3.816564	-0.226066	-1.720402
6	-4.905862	-1.319140	-0.841969	6	-5.201197	-1.450551	-0.914162	6	-5.484766	-2.202966	-0.873397
6	-4.633381	0.209163	-0.560502	6	-5.165862	0.104174	-0.442927	6	-5.514822	-0.670415	-0.875979
6	-3.672112	-2.050281	-0.328557	6	-3.937938	-2.068524	-0.322476	6	-4.072678	-2.477012	-0.278745
6	-3.740480	0.014835	0.759105	6	-4.141306	-0.012417	0.717787	6	-4.423258	-0.221325	-0.021220
6	2.752383	-2.549489	0.363261	6	2.694799	-2.453645	0.338892	6	2.696206	-2.549949	0.304138
6	-2.598093	-2.330458	-1.408019	6	-2.710784	-2.114215	-1.272123	6	-2.969112	-2.674832	-1.364134
6	3.360464	2.192107	-0.721511	6	3.371800	2.217214	-0.805003	6	3.340292	2.136061	-0.941221
6	1.649384	1.133633	-1.489636	6	1.670272	1.135832	-1.561191	6	1.659149	1.053624	-1.741581
6	-1.468618	0.858208	1.293288	6	-1.524502	0.912396	1.048225	6	-0.752067	2.140054	0.981540
6	-3.169536	2.399453	0.735460	6	-3.014832	2.483715	0.192364	6	-2.128373	3.823795	0.284255
6	2.219326	2.975722	-0.683037	6	2.229100	3.000501	-0.795929	6	2.206026	2.928267	-0.999809
6	-0.570842	1.884615	1.554186	6	-0.586189	1.896853	1.371414	6	0.035125	3.004214	1.754589
6	-2.292737	3.455018	0.913423	6	-2.135388	3.523028	0.472936	6	-1.425222	4.770170	1.027887
6	-0.994925	3.206534	1.351918	6	-0.925443	3.227895	1.090388	6	-0.331805	4.355219	1.777696
6	2.346798	4.289245	-0.197854	6	2.349633	4.325798	-0.339143	6	2.327509	4.269151	-0.598200
6	4.553398	3.936348	0.172658	6	4.562168	3.989442	0.037014	6	4.514670	3.925759	-0.107743
6	0.805526	1.676672	2.145680	6	0.746147	1.654512	2.048047	6	1.235578	2.573730	2.554437
1	5.341155	-2.293177	0.451352	1	5.299145	-2.283541	0.467509	1	5.301284	-2.323788	0.422309
1	4.746372	-0.048273	0.389771	1	4.728638	-0.025930	0.373300	1	4.693780	-0.077429	0.292017
1	3.664332	-3.404847	-1.435030	1	3.625221	-3.393648	-1.408539	1	3.638212	-3.479888	-1.443856
1	4.263518	0.095237	-2.578140	1	4.311185	0.106878	-2.601587	1	4.289331	-0.030049	-2.692012
1	-5.064558	-1.499206	-1.916933	1	-5.210474	-1.536852	-2.012400	1	-5.568524	-2.590356	-1.898221
1	-3.908826	0.580746	-1.337072	1	-4.718733	0.716571	-1.266760	1	-5.921358	-0.116368	-1.719881
1	-3.942776	-2.983741	0.167753	1	-4.121274	-3.057006	0.094029	1	-4.085124	-3.342934	0.384142
1	-4.372333	0.062060	1.653636	1	-4.370202	0.442770	1.680396	1	-3.829331	0.694017	-0.114357

1	2.676059	-1.568811	0.847392	1	2.647270	-1.459577	0.798298	1	2.641614	-1.556199	0.765727
1	3.244054	-3.232500	1.070106	1	3.141889	-3.138204	1.073426	1	3.163339	-3.226603	1.033766
1	-3.045311	-2.971384	-2.180643	1	-3.003032	-2.684993	-2.165320	1	-3.317196	-3.436527	-2.075835
1	-2.298326	-1.393373	-1.894036	1	-2.453373	-1.102415	-1.607620	1	-2.832316	-1.743422	-1.927436
1	6.497254	-1.508481	-1.662421	1	6.496911	-1.538723	-1.641011	1	6.493956	-1.603432	-1.693430
1	6.630723	0.646189	-0.328885	1	6.662865	0.586191	-0.286753	1	6.653561	0.497894	-0.350420
1	-6.493595	-0.758025	-0.036926	1	-6.774480	-1.065375	-0.031220	1	-7.140203	-2.120257	0.242473
1	1.076874	0.328950	-1.944155	1	1.103676	0.321168	-2.005942	1	1.104587	0.235858	-2.196199
1	-1.257401	-0.198032	1.379351	1	-1.382643	-0.146292	1.250118	1	-0.518124	1.080242	0.922862
1	-4.208232	2.497542	0.432018	1	-3.991058	2.662915	-0.244413	1	-2.988193	4.124485	-0.309992
1	-2.641115	4.466469	0.735486	1	-2.412330	4.544296	0.233433	1	-1.740692	5.807575	1.025259
1	-0.300370	4.013020	1.550367	1	-0.228801	4.010773	1.364774	1	0.248196	5.062703	2.357537
1	5.498229	4.309840	0.549094	1	5.508797	4.375480	0.399180	1	5.449614	4.314798	0.282502
1	0.678128	5.028102	-0.941528	1	0.689160	5.141238	-1.106525	1	0.657035	5.006881	-1.414721
1	1.668804	6.144773	-0.078601	1	1.589820	6.168323	-0.036129	1	1.575879	6.138813	-0.480367
1	1.999347	0.255447	2.933316	1	1.853307	0.206702	2.923215	1	2.182966	0.914191	3.244942
1	0.666111	-0.398399	2.156646	1	0.521706	-0.415542	2.112766	1	0.899481	0.552915	2.242249
8	-1.732932	8.741591	10.807593	8	-1.655549	8.716678	10.850465	8	-1.602498	8.787549	10.805521
1	-2.264647	8.604418	10.022588	1	-2.188432	8.587229	10.064940	1	-2.137969	8.658386	10.021711
1	-2.081154	9.545171	11.194012	1	-1.996488	9.521960	11.239826	1	-1.936296	9.597428	11.191517
8	-10.623665	-5.393306	-7.706241	8	-10.672937	-5.268680	-7.715605	8	-10.767226	-5.218783	-7.672383
1	-11.223764	-5.344141	-8.449927	1	-11.272512	-5.211331	-8.459128	1	-11.367830	-5.160421	-8.414996
1	-9.849529	-4.907761	-7.991883	1	-9.894404	-4.789137	-7.999429	1	-9.985513	-4.746818	-7.960145
8	-6.572976	12.693772	4.512077	8	-6.459055	12.735786	4.569352	8	-6.386866	12.813004	4.513874
1	-5.739708	12.678020	4.042042	1	-5.625931	12.714197	4.099295	1	-5.554889	12.782499	4.042283
1	-6.463867	12.052457	5.214114	1	-6.355825	12.090927	5.269029	1	-6.287306	12.170853	5.216566
8	-7.350609	4.386996	10.620409	8	-7.312522	4.413992	10.647040	8	-7.293586	4.528650	10.634846
1	-7.188657	3.777040	11.339591	1	-7.156167	3.799948	11.363979	1	-7.140627	3.916980	11.354540
1	-7.573961	3.827150	9.876811	1	-7.540895	3.858937	9.901379	1	-7.527830	3.971698	9.892428
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1	-13.483924	-0.542030	-7.942871	1	-13.489010	-0.390794	-7.934488	1	-13.545225	-0.319992	-7.910122
1	-13.285204	-1.330890	-9.218241	1	-13.297371	-1.176727	-9.212746	1	-13.362363	-1.113785	-9.184804
8	2.395023	12.702811	5.478331	8	2.508587	12.659835	5.535977	8	2.581833	12.671156	5.463118
1	2.642539	12.338101	4.628921	1	2.752841	12.296021	4.685239	1	2.821495	12.301184	4.613731
1	3.131197	12.490433	6.053247	1	3.242760	12.438668	6.110134	1	3.315399	12.447074	6.036922
8	6.371452	4.709491	-10.390281	8	6.413407	4.689186	-10.361796	8	6.391649	4.590678	-10.402228
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1	5.784649	5.455593	-10.264020	1	5.833394	5.440116	-10.232812	1	5.817831	5.346793	-10.275859
8	3.725806	6.917504	-2.275174	8	4.143172	6.457258	-2.299625	8	4.174853	6.322543	-2.553534
1	3.336567	7.214667	-1.433374	1	3.814667	6.131940	-1.444003	1	3.841221	5.985213	-1.704191
1	4.588184	6.570129	-1.997843	1	5.106667	6.328203	-2.205761	1	5.140635	6.257345	-2.427388
8	15.354110	-0.340343	-0.746755	8	15.349150	-0.477459	-0.736576	8	15.305828	-0.598158	-0.768954
1	14.405795	-0.220322	-0.789194	1	14.401968	-0.348676	-0.778610	1	14.359608	-0.462121	-0.809757
1	15.493365	-1.247215	-1.016642	1	15.480185	-1.384558	-1.009794	1	15.429162	-1.507617	-1.037882
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1	-10.250024	-6.377209	-0.958158	1	-10.308729	-6.280761	-0.971175	1	-10.397388	-6.200017	-0.923702
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1	-11.913640	4.357394	0.166650	1	-11.874884	4.464294	0.193070	1	-11.876503	4.562736	0.189805
1	-12.923311	4.649713	1.256091	1	-12.881937	4.761758	1.283540	1	-12.878979	4.873574	1.280762
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1	-1.827176	13.512805	-5.472752	1	-1.705298	13.548428	-5.412213	1	-1.647013	13.538278	-5.481024
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8	3.985516	4.174777	-6.452834	8	4.022433	4.161674	-6.426434	8	4.004544	4.101696	-6.459549
1	3.375067	4.064004	-7.182439	1	3.411055	4.059134	-7.156465	1	3.390903	4.000337	-7.187846
1	4.825406	3.866544	-6.794568	1	4.859513	3.847087	-6.769268	1	4.838425	3.778808	-6.802459
8	0.517333	3.819250	4.856818	8	0.679877	3.652369	4.845358	8	1.118629	4.572313	5.504652
1	0.886107	3.493578	4.020816	1	1.029660	3.374304	3.983355	1	1.444999	4.262292	4.642010
1	-0.380277	4.090192	4.606870	1	-0.235103	3.905361	4.629521	1	0.182509	4.762838	5.316294
8	11.963779	-0.562072	-7.443080	8	11.957426	-0.643750	-7.433802	8	11.899387	-0.771133	-7.458537
1	11.983023	-1.501158	-7.626572	1	11.968154	-1.582291	-7.620748	1	11.902346	-1.710650	-7.640800
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8	6.317548	-0.687791	8.211108	8	6.309164	-0.775799	8.219601	8	6.281869	-0.780468	8.206479
1	7.264967	-0.634060	8.082122	1	7.257042	-0.730199	8.090850	1	7.229815	-0.742989	8.075626
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1	11.089254	9.307508	-2.666565	1	11.172213	9.215720	-2.621028	1	11.201578	9.118132	-2.693664
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8	4.353616	-12.693145	3.871126	8	4.236612	-12.746773	3.835390	8	4.106242	-12.756465	3.886395
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8	5.480320	-1.950525	-10.203827	8	5.461824	-1.963104	-10.199888	8	5.388026	-2.053010	-10.205118
1	6.011946	-1.891551	-9.409433	1	5.993907	-1.911884	-9.405262	1	5.922097	-2.002020	-9.411813
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8	1.816635	9.040139	-6.070474	8	1.897791	9.045090	-6.026253	8	1.919245	9.003653	-6.079630
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8	10.985934	3.706954	-3.364609	8	11.018092	3.618942	-3.339684	8	11.001926	3.519225	-3.383971
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8	1.496385	4.759142	11.188833	8	1.537447	4.703694	11.217169	8	1.559522	4.751388	11.186001
1	0.914010	5.402360	11.591741	1	0.960906	5.350686	11.622419	1	0.988914	5.404922	11.589146
1	2.231194	5.275613	10.857026	1	2.276939	5.214689	10.887293	1	2.302348	5.254881	10.852107
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1	10.163920	3.685948	8.954107	1	10.195039	3.560070	8.978841	1	10.203301	3.528355	8.936299
8	4.452782	11.118320	6.197089	8	4.551822	11.054090	6.248976	8	4.613791	11.052926	6.180106
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1	-1.963997	-6.472540	-0.930740	1	-2.027724	-6.356555	-0.960997	1	-1.892028	-6.640556	-0.892060
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8	1.202638	-2.296175	-3.428300	8	1.161760	-2.209532	-3.440370	8	1.107344	-2.257429	-3.444290
1	1.795381	-1.875632	-2.776908	1	1.797508	-1.819814	-2.810441	1	1.771575	-1.899580	-2.823607
1	1.066246	-3.180750	-3.006055	1	0.997333	-3.087498	-3.012482	1	0.954616	-3.152107	-3.048043
8	1.960755	8.813534	-3.296985	8	2.604283	8.623405	-3.173565	8	2.667896	8.553479	-3.333549
1	2.595220	8.093450	-3.167422	1	3.174699	7.847740	-3.056480	1	3.285136	7.809000	-3.263739
1	1.923214	8.899512	-4.264654	1	2.422608	8.622284	-4.125264	1	2.508518	8.619554	-4.287977
8	1.990735	-9.681756	1.165444	8	1.864088	-9.606318	1.096244	8	1.852485	-9.730722	1.186944
1	2.063993	-9.166559	1.982127	1	1.955369	-9.107987	1.921300	1	1.951960	-9.208312	1.997922
1	1.759832	-8.997936	0.506466	1	1.645259	-8.906500	0.450816	1	1.694654	-9.040452	0.513526
8	-0.412608	8.601489	-1.794105	8	0.091780	7.938114	-2.156195	8	0.291333	7.911574	-2.170669
1	0.434291	8.737913	-2.257739	1	0.957393	8.331439	-2.366290	1	1.143244	8.301001	-2.445568
1	-0.825571	7.893859	-2.311988	1	-0.051577	7.343503	-2.912956	1	0.064252	7.361893	-2.942874
8	6.465545	-1.455441	-7.643459	8	6.451320	-1.486412	-7.637678	8	6.386415	-1.571349	-7.647292
1	7.312344	-1.730248	-7.994725	1	7.295614	-1.767602	-7.989921	1	7.227756	-1.860945	-7.999792
1	6.376436	-0.542591	-7.918103	1	6.370524	-0.571786	-7.908964	1	6.312279	-0.657480	-7.922995
8	3.768678	-14.923534	1.871641	8	3.631590	-14.964384	1.827687	8	3.479719	-14.979233	1.891026
1	4.325955	-15.068122	2.636343	1	4.187476	-15.116840	2.591874	1	4.035928	-15.132250	2.654865
1	3.172914	-15.672071	1.864219	1	3.029054	-15.707449	1.817488	1	2.871329	-15.717564	1.885741
8	-8.902928	-0.746909	-8.796859	8	-8.910003	-0.634117	-8.789050	8	-8.970010	-0.603686	-8.772515
1	-9.019202	-1.581707	-9.251028	1	-9.033820	-1.466149	-9.246292	1	-9.101300	-1.436988	-9.225337
1	-8.546894	-0.987341	-7.941391	1	-8.556228	-0.880919	-7.934459	1	-8.616467	-0.849000	-7.917400
8	15.887168	1.048008	-4.549365	8	15.895066	0.919977	-4.534031	8	15.855069	0.775950	-4.574433
1	15.130669	0.502262	-4.335296	1	15.133626	0.380339	-4.322000	1	15.089831	0.243400	-4.358196
1	15.565834	1.651207	-5.218771	1	15.579270	1.528530	-5.201225	1	15.542729	1.383635	-5.244041
8	-4.608254	-8.729971	-9.285054	8	-4.687958	-8.653997	-9.306458	8	-4.812322	-8.659099	-9.258100
1	-4.232648	-9.599360	-9.424615	1	-4.320253	-9.526242	-9.449204	1	-4.451788	-9.534918	-9.397203
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1	-14.189456	-5.070793	-1.073875	1	-14.236128	-4.938210	-1.082233	1	-14.314307	-4.827103	-1.033710
1	-13.945155	-5.343355	-2.542546	1	-13.994207	-5.207573	-2.551888	1	-14.077481	-5.105700	-2.502474
8	4.074859	4.424177	6.581095	8	4.119075	4.365418	6.608199	8	4.198244	4.439002	6.574163
1	4.642124	3.820105	7.103244	1	4.676688	3.755122	7.134092	1	4.647333	3.758830	7.117975
1	3.301006	3.854992	6.405031	1	3.343181	3.802780	6.422765	1	3.507157	3.922718	6.136447
8	-15.811352	-2.681375	2.386579	8	-15.836509	-2.546913	2.386928	8	-15.888795	-2.405967	2.426590
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8	-11.536040	1.007919	-9.685214	8	-11.527008	1.147804	-9.671041	8	-11.574674	1.194394	-9.658239
1	-11.325486	0.106771	-9.441762	1	-11.324663	0.243892	-9.430899	1	-11.378971	0.290124	-9.413973
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8	6.035914	2.547419	-2.847203	8	6.126230	2.480631	-2.859492	8	6.068531	2.402285	-2.961613
1	5.686768	2.546376	-1.940895	1	5.768202	2.469439	-1.956493	1	5.727684	2.369092	-2.052823
1	5.216837	2.581455	-3.380081	1	5.310698	2.520965	-3.399118	1	5.244498	2.449381	-3.485669
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8	4.410357	-5.849796	4.816651	8	4.346655	-5.898883	4.799470	8	4.283951	-5.907836	4.818426
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1	3.650744	-6.153039	5.352043	1	3.586164	-6.202008	5.333896	1	3.512197	-6.182793	5.352116
8	-1.560408	-5.072687	3.830786	8	-1.622893	-5.089383	3.841350	8	-0.416347	-4.808491	3.590003
1	-1.637195	-4.655357	2.939509	1	-1.730958	-4.665792	2.956745	1	-0.951468	-4.530720	2.807916
1	-1.181214	-5.937409	3.612652	1	-1.248318	-5.950915	3.605278	1	-0.573997	-5.765593	3.605130
8	11.169293	7.622517	-6.171522	8	11.237199	7.542980	-6.132161	8	11.246299	7.427421	-6.196495
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8	-2.521549	0.584631	7.538505	8	-2.517966	0.579300	7.551348	8	-2.535644	0.640855	7.548918
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1	-0.578319	-6.830457	-10.911671	1	-0.640826	-6.785182	-10.925919	1	-0.753872	-6.830371	-10.894908
8	1.285486	9.020724	11.263522	8	1.365246	8.966710	11.307534	8	1.421089	9.016027	11.255352

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1	0.475667	8.957466	10.757157	1	0.554922	8.912673	10.800909	1	0.609343	8.965853	10.750609
8	-3.924218	-8.157797	6.242958	8	-3.999867	-8.145204	6.223580	8	-4.088899	-8.078212	6.267803
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8	10.285980	6.942711	9.185482	8	10.346649	6.814717	9.222205	8	10.381034	6.782879	9.163058
1	9.678488	6.985291	9.923312	1	9.739516	6.860095	9.960163	1	9.775769	6.836729	9.901980
1	9.875324	7.477303	8.505094	1	9.940914	7.355516	8.543772	1	9.978204	7.323468	8.482730
8	-0.540465	-11.733326	-1.517078	8	-0.648165	-11.722731	-1.549432	8	-0.781178	-11.720829	-1.493811
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8	13.031866	0.038888	2.090848	8	13.030242	-0.087602	2.102315	8	12.995798	-0.175855	2.072533
1	13.956362	-0.029267	2.327863	1	13.954064	-0.165020	2.339113	1	13.919458	-0.259373	2.307887
1	13.001560	-0.216636	1.169022	1	12.997683	-0.339445	1.179553	1	12.959394	-0.432038	1.151111
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8	7.726413	-6.899978	-5.634971	8	7.662554	-6.949528	-5.649193	8	7.558591	-7.033851	-5.633869
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8	11.959196	-9.669435	0.871493	8	11.869550	-9.781232	0.847196	8	11.756255	-9.866174	0.868284
1	11.461324	-10.050435	1.594105	1	11.368187	-10.160351	1.568382	1	11.253378	-10.237722	1.592351
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1	8.461496	-2.392607	-5.274113	1	8.438372	-2.457484	-5.264627	1	8.370236	-2.545976	-5.272761
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8	1.902657	2.721347	6.870638	8	1.976409	2.616283	6.930344	8	1.912806	2.453385	6.968301
1	1.330888	3.071285	6.158232	1	1.428852	2.948412	6.189792	1	1.564076	3.165679	6.401728
1	1.320563	2.799836	7.651962	1	1.372793	2.724126	7.690752	1	1.398940	2.591275	7.793148
8	-3.293194	11.122039	6.549142	8	-3.193826	11.126850	6.600744	8	-3.130318	11.188529	6.546834
1	-3.372804	12.067861	6.429702	1	-3.264836	12.073789	6.484783	1	-3.194101	12.135408	6.426271
1	-2.369680	10.936496	6.382053	1	-2.272024	10.933545	6.433008	1	-2.210408	10.987124	6.378244

8	7.479536	3.574264	5.907932	8	7.507605	3.464674	5.936533	8	7.547977	3.550269	5.928077
1	6.930062	3.296467	5.163549	1	6.954948	3.172053	5.199560	1	6.947743	3.381734	5.193913
1	8.326619	3.125384	5.723576	1	8.355711	3.017147	5.753848	1	8.333859	3.023861	5.691874
8	3.964473	2.359988	10.472798	8	3.983698	2.284878	10.492403	8	3.985176	2.309765	10.468520
1	4.402657	2.821346	9.758314	1	4.426105	2.744864	9.779639	1	4.429753	2.762682	9.752586
1	4.555748	1.638175	10.689184	1	4.568380	1.556935	10.706154	1	4.564536	1.578309	10.684757
8	-12.826633	3.060504	-3.773239	8	-12.799334	3.190255	-3.751601	8	-12.818921	3.276347	-3.746598
1	-12.722030	3.095159	-2.822384	1	-12.694488	3.220460	-2.800621	1	-12.711921	3.310472	-2.795991
1	-13.773874	3.039964	-3.908929	1	-13.746712	3.178816	-3.887401	1	-13.766632	3.271703	-3.880463
8	12.174962	6.885224	6.881816	8	12.227357	5.885246	6.915237	8	12.249702	5.827076	6.857057
1	11.966580	6.607917	6.154926	1	12.024357	6.475830	6.190501	1	12.049897	6.415638	6.129775
1	11.710305	6.393630	7.631105	1	11.766041	6.258448	7.665871	1	11.792857	6.207670	7.606724
8	3.037940	-10.053960	5.350384	8	2.944849	-10.101211	5.324301	8	2.838365	-10.093396	5.364590
1	2.542309	-10.853379	5.172133	1	2.441992	-10.895435	5.143090	1	2.328904	-10.884524	5.188354
1	2.804596	-9.462914	4.635032	1	2.716932	-9.505441	4.611120	1	2.613709	-9.499416	4.648885
8	6.754241	-7.335166	5.391054	8	6.685681	-7.416443	5.375118	8	6.600324	-7.437995	5.394555
1	6.510642	-8.186579	5.028199	1	6.434387	-8.264267	5.009123	1	6.341622	-8.285628	5.033309
1	6.002970	-6.771804	5.206102	1	5.939570	-6.845605	5.192213	1	5.858364	-6.862211	5.210270
8	6.808783	-13.656938	2.862637	8	6.682999	-13.729102	2.823454	8	6.542767	-13.763099	2.874553
1	6.741994	-14.595508	3.041503	1	6.607678	-14.667679	2.998863	1	6.460410	-14.700165	3.054808
1	6.092590	-13.266255	3.363911	1	5.970348	-13.333778	3.326135	1	5.834268	-13.359661	3.376657
8	-0.219486	-1.997223	-5.825660	8	-0.288975	-1.905615	-5.814228	8	-0.376735	-1.895580	-5.779395
1	-0.531892	-2.916716	-5.934402	1	-0.591662	-2.826225	-5.937090	1	-0.673476	-2.819135	-5.903911
1	0.200872	-2.032782	-4.945010	1	0.142305	-1.952097	-4.939474	1	0.077586	-1.948985	-4.916473
8	1.739713	-12.858094	-7.320238	8	1.622121	-12.846795	-7.356605	8	1.468458	-12.891746	-7.299763
1	0.880096	-12.482041	-7.128640	1	0.765940	-12.463660	-7.163657	1	0.615713	-12.500912	-7.107043
1	1.567770	-13.790152	-7.454692	1	1.441732	-13.776752	-7.494495	1	1.280471	-13.820929	-7.432635
8	8.756842	1.659558	-2.712783	8	8.813513	1.576780	-2.694078	8	8.780938	1.497219	-2.731980
1	7.818906	1.873442	-2.565337	1	7.877109	1.800870	-2.551388	1	7.844753	1.715109	-2.586052
1	9.158619	1.876522	-1.855245	1	9.212871	1.787320	-1.833520	1	9.182868	1.708443	-1.872668
8	2.919095	6.783125	-8.252169	8	2.979868	6.786201	-8.216198	8	2.979073	6.725394	-8.260370
1	2.195255	6.573182	-8.841917	1	2.254194	6.585011	-8.806741	1	2.250646	6.526988	-8.848460
1	3.702133	6.697128	-8.795334	1	3.762132	6.695096	-8.759645	1	3.759496	6.625410	-8.804901
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1	-3.422427	-5.015466	9.242695	1	-3.469780	-5.018619	9.234882	1	-3.528122	-4.940908	9.262351
1	-2.180502	-5.869391	9.384721	1	-2.235670	-5.884302	9.373811	1	-2.300592	-5.815593	9.403171
8	-16.621009	-0.556219	-0.647995	8	-16.626617	-0.403340	-0.639834	8	-16.668103	-0.271368	-0.609301
1	-16.229538	0.316763	-0.675008	1	-16.227234	0.466144	-0.663619	1	-16.261933	0.594809	-0.638231
1	-17.550705	-0.396550	-0.486318	1	-17.554838	-0.235831	-0.477606	1	-17.594646	-0.095736	-0.446078
8	-6.782034	0.242181	8.685340	8	-6.781468	0.271334	8.696752	8	-6.799118	0.372246	8.704286
1	-7.341858	-0.522891	8.550556	1	-7.348206	-0.488122	8.559132	1	-7.372097	-0.383394	8.571594
1	-6.766884	0.362471	9.635371	1	-6.765294	0.387984	9.647221	1	-6.780108	0.493510	9.654124
8	10.919395	8.146991	0.638033	8	10.991586	8.044640	0.679269	8	11.018395	7.965007	0.612809
1	10.538499	9.016720	0.761319	1	10.618594	8.917333	0.805741	1	10.652544	8.841235	0.735646
1	11.833366	8.316664	0.412801	1	11.907075	8.206836	0.454698	1	11.934678	8.118853	0.385617
8	-7.605862	-9.260069	4.895406	8	-7.691273	-9.209033	4.871841	8	-7.791290	-9.119630	4.928717
1	-6.962647	-8.950015	5.532886	1	-7.045315	-8.907180	5.510481	1	-7.141687	-8.819696	5.564557
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8	6.265488	-0.394453	5.271339	8	6.233882	-0.467611	5.285863	8	6.266399	-0.605029	5.276420
1	5.615988	-1.007069	4.884216	1	5.576850	-1.074375	4.902062	1	5.567874	-1.170536	4.900777
1	6.016709	-0.392398	6.209399	1	5.995850	-0.471560	6.226974	1	6.023562	-0.573638	6.215983
8	5.964322	7.860494	-7.939982	8	6.034730	7.834718	-7.899932	8	6.042732	7.751351	-7.955406
1	6.097921	7.113720	-7.356875	1	6.161501	7.084621	-7.319572	1	6.164761	7.003185	-7.371548
1	5.133099	8.241084	-7.655463	1	5.206977	8.221790	-7.614046	1	5.218632	8.146362	-7.669825
8	-3.316009	-9.128641	-0.608183	8	-3.371955	-9.043689	-0.660773	8	-3.188632	-9.340839	-0.631592
1	-4.255544	-8.874279	-0.579185	1	-4.310591	-8.786458	-0.616879	1	-4.129107	-9.112368	-0.531806
1	-3.322841	-9.911082	-1.172437	1	-3.389913	-9.823657	-1.228118	1	-3.209755	-10.055905	-1.281085
8	5.526957	-5.293980	-5.871080	8	5.477790	-5.322766	-5.879473	8	5.386248	-5.391079	-5.867970
1	5.151859	-4.600950	-6.414085	1	5.109039	-4.624365	-6.419939	1	5.021919	-4.692499	-6.411197
1	5.590715	-4.906424	-4.997853	1	5.545001	-4.939021	-5.004823	1	5.458245	-5.003513	-4.995388
8	-0.053198	-8.728449	6.696745	8	-0.134222	-8.752649	6.675412	8	-0.227254	-8.713863	6.715020
1	0.000071	-9.440299	6.057927	1	-0.087373	-9.462598	6.033981	1	-0.187294	-9.427352	6.077061
1	0.434500	-9.050284	7.453934	1	0.350479	-9.081683	7.431430	1	0.256365	-9.042931	7.471715
8	-4.260790	7.129537	-5.937904	8	-4.196742	7.189278	-5.900948	8	-4.189450	7.196615	-5.932968
1	-5.007180	6.532817	-5.983120	1	-4.948516	6.599530	-5.948388	1	-4.945941	6.612586	-5.975967
1	-3.512252	6.599735	-6.212062	1	-3.453025	6.653712	-6.177025	1	-3.450535	6.653829	-6.207832
8	-13.666661	-4.653907	0.546066	8	-13.709685	-4.532052	0.539250	8	-13.781409	-4.417019	0.584673
1	-13.375010	-4.723581	1.455112	1	-13.418745	-4.607717	1.448045	1	-13.489240	-4.490437	1.493258
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1	-4.816123	7.298515	-1.077479	1	-4.635593	7.204970	-1.309550	1	-5.746579	6.861808	-1.310750

1	-4.628662	7.079773	0.409393	1	-4.285042	6.940479	0.137338	1	-6.081589	5.951854	-0.146935
8	4.915992	-7.642155	-7.440427	8	4.845640	-7.659506	-7.457476	8	4.732527	-7.730610	-7.432994
1	5.086577	-6.851086	-6.929445	1	5.023364	-6.871904	-6.943579	1	4.917486	-6.941878	-6.923401
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8	-3.469649	-13.357371	4.581762	8	-3.592412	-13.342543	4.543277	8	-3.725787	-13.286928	4.612750
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8	1.704736	-3.595260	-8.486336	8	1.671339	-3.579797	-8.488606	8	1.588384	-3.631192	-8.478262
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1	2.332076	-3.108739	-7.951331	1	2.303031	-3.100964	-7.951790	1	2.224912	-3.154681	-7.945103
8	10.696413	-11.141592	3.301640	8	10.593278	-11.250793	3.271860	8	10.473343	-11.313499	3.302799
1	10.050468	-10.441415	3.206600	1	9.953723	-10.544435	3.179373	1	9.839188	-10.602590	3.208042
1	11.145100	-10.943414	4.122662	1	11.043687	-11.059721	4.093624	1	10.926901	-11.121884	4.122703
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1	8.336838	-5.399552	3.783262	1	8.278845	-5.483162	3.776075	1	8.190013	-5.502961	3.794420
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8	5.422723	6.411872	5.102036	8	5.479066	6.343091	5.136646	8	5.501651	6.329265	5.089554
1	5.081747	5.773749	5.728120	1	5.132264	5.705791	5.760365	1	5.151100	5.697842	5.717142
1	4.960685	7.223639	5.311503	1	5.024402	7.158244	5.349082	1	5.053851	7.149029	5.298804
8	-6.471258	1.219753	-7.406684	8	-6.435863	1.311030	-7.383732	8	-6.563407	1.330370	-7.373573
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1	-6.129385	0.316437	-7.375491	1	-6.143629	0.390309	-7.441702	1	-6.243825	0.417537	-7.360116
8	-4.198614	13.913164	-3.378766	8	-4.073153	13.962597	-3.316859	8	-4.007297	13.981567	-3.383089
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1	7.935267	-12.662392	-0.174064	1	7.818685	-12.733658	-0.209523	1	7.680135	-12.791800	-0.165615
1	6.789026	-12.527144	-1.153050	1	6.673790	-12.584406	-1.188048	1	6.534478	-12.638410	-1.142608
8	4.118449	2.149526	3.229466	8	4.084160	2.011799	3.121913	8	4.377876	2.417917	3.949395
1	3.727163	1.438903	3.775374	1	3.676424	1.321427	3.681823	1	3.933177	1.645868	4.351756
1	3.327035	2.588564	2.876205	1	3.303249	2.468989	2.768569	1	3.623455	2.930794	3.612220
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8	-0.022011	6.100639	-4.633796	8	0.248448	6.459352	-4.539056	8	-0.037062	6.430202	-4.472162
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1	-0.156791	6.856513	-5.221201	1	-0.060070	7.183543	-5.108329	1	-0.234898	7.144199	-5.100356
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1	-4.302703	8.500295	5.201831	1	-4.227003	8.519356	5.243754	1	-4.186738	8.582522	5.204969
8	-4.495968	3.173656	3.484870	8	-4.267302	3.104393	3.243729	8	-3.099196	3.218564	3.274828
1	-5.192540	2.706867	2.989034	1	-5.075964	2.711968	2.864561	1	-3.856041	2.724145	2.896905
1	-4.061489	2.433577	3.961164	1	-3.946895	2.375868	3.819472	1	-2.532637	2.486591	3.595434
8	7.174356	10.530659	7.347206	8	7.267865	10.437511	7.397027	8	7.327204	10.420685	7.325853
1	7.345942	11.451290	7.147652	1	7.447818	11.357274	7.200868	1	7.514001	11.338009	7.124735
1	6.640139	10.553280	8.141407	1	6.733819	10.462060	8.191284	1	6.794973	10.453411	8.121033
8	10.110694	6.666602	-2.097843	8	10.169672	6.581733	-2.062068	8	10.179451	6.494958	-2.119534
1	10.400649	5.995169	-2.716428	1	10.453562	5.909976	-2.683108	1	10.456786	5.817891	-2.737763
1	10.325889	6.307264	-1.236924	1	10.381534	6.217291	-1.202469	1	10.390170	6.133153	-1.258541
8	13.480308	-3.189200	-3.610050	8	13.449763	-3.298628	-3.610408	8	13.378481	-3.418573	-3.624854
1	14.165175	-2.892687	-3.011038	1	14.137250	-3.010553	-3.010283	1	14.069426	-3.132937	-3.027540
1	13.218485	-2.399531	-4.084327	1	13.195155	-2.504875	-4.081787	1	13.129182	-2.625201	-4.099698
8	-5.001779	9.703131	-7.107750	8	-4.914246	9.773780	-7.061343	8	-4.888916	9.780870	-7.104873
1	-4.187592	10.173675	-7.285626	1	-4.095807	10.237564	-7.237455	1	-4.067206	10.237299	-7.284925
1	-4.737669	8.786576	-7.034722	1	-4.658475	8.854603	-6.991678	1	-4.640253	8.860064	-7.031111
8	-7.606820	4.605908	6.222936	8	-7.566420	4.651402	6.250393	8	-7.554481	4.746100	6.237577

1	-7.968775	4.140223	6.976876	1	-7.932643	4.186251	7.002601	1	-7.922838	4.287614	6.992828
1	-7.079872	3.949328	5.766558	1	-7.045423	3.991748	5.791622	1	-7.039624	4.080075	5.781085
8	14.976877	-5.650256	-3.783600	8	14.923935	-5.772517	-3.792959	8	14.832749	-5.904893	-3.797928
1	15.804263	-5.170103	-3.818163	1	15.755650	-5.299772	-3.825722	1	15.668094	-5.438891	-3.834704
1	14.304316	-4.968748	-3.807952	1	14.257591	-5.084845	-3.814827	1	14.171800	-5.212105	-3.821921
8	-6.645847	-8.109006	2.194884	8	-6.720652	-8.056806	2.175610	8	-6.817068	-7.988571	2.224833
1	-7.359665	-7.473409	2.252171	1	-7.428674	-7.414967	2.235209	1	-7.519891	-7.340878	2.282617
1	-6.405044	-8.281316	3.105593	1	-6.481489	-8.234645	3.085688	1	-6.577476	-8.163744	3.135315
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1	-6.129686	-13.786260	2.629833	1	-6.256094	-13.740074	2.589681	1	-6.396456	-13.673188	2.666446
8	5.680833	2.781920	7.890104	8	5.704005	2.700709	7.911346	8	5.703492	2.699122	7.882013
1	6.112562	1.980601	8.183857	1	6.128418	1.894427	8.202163	1	6.122127	1.890979	8.176025
1	6.300469	3.178276	7.277715	1	6.327257	3.093672	7.300443	1	6.328586	3.084103	7.267917
8	9.220204	9.296434	3.275502	8	9.302713	9.199753	3.320886	8	9.344008	9.146579	3.251945
1	9.782307	9.492361	2.525789	1	9.866626	9.393324	2.571920	1	9.907915	9.331955	2.500904
1	8.782957	8.477978	3.039897	1	8.858070	8.386172	3.082253	1	8.892489	8.335349	3.018270
8	-13.979244	-0.639304	4.267041	8	-13.986068	-0.528496	4.274964	8	-14.018706	-0.392805	4.300827
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1	-13.490333	-0.891171	5.049941	1	-13.499521	-0.787672	5.056950	1	-13.532638	-0.651902	5.083137
8	2.611571	-9.984775	-7.445155	8	2.520042	-9.981071	-7.470913	8	2.388692	-10.033800	-7.430200
1	1.910163	-10.632768	-7.515227	1	1.812784	-10.622405	-7.543397	1	1.676259	-10.669890	-7.498070
1	3.410834	-10.505448	-7.361670	1	3.314539	-10.509285	-7.389315	1	3.179167	-10.567849	-7.347530
8	4.535205	11.237634	3.202740	8	4.635540	11.183669	3.255089	8	4.692484	11.166890	3.185448
1	4.373115	10.296545	3.140470	1	4.464914	10.244326	3.189350	1	4.514332	10.228605	3.124752
1	5.484957	11.322276	3.128023	1	5.586025	11.259958	3.180721	1	5.643389	11.235308	3.108817
8	9.408246	-0.669795	0.680501	8	9.425359	-0.766946	0.722144	8	9.429040	-0.861774	0.646881
1	9.164880	-1.402852	0.083351	1	9.170169	-1.490966	0.118787	1	9.171811	-1.599043	0.060786
1	10.369284	-0.700442	0.671019	1	10.386065	-0.804998	0.702226	1	10.389277	-0.916840	0.645625
8	-7.180471	5.788950	-3.749649	8	-6.965502	5.943682	-3.601927	8	-7.276846	6.077718	-3.836764
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8	-1.658278	-3.836972	-9.065501	8	-1.693691	-3.788829	-9.068785	8	-1.779352	-3.816572	-9.050726
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1	-2.548874	-4.100919	-9.297339	1	-2.586631	-4.043823	-9.301628	1	-2.674740	-4.065676	-9.280521
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1	-5.969410	1.508113	8.001709	1	-5.957333	1.532341	8.017816	1	-5.966448	1.623310	8.017412
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8	2.570906	6.150785	7.961689	8	2.624791	6.097388	7.995210	8	2.651304	6.120358	7.954956
1	3.278009	5.695185	7.503974	1	3.327760	5.637074	7.535848	1	3.349698	5.652226	7.496515
1	1.769634	5.783309	7.588959	1	1.820241	5.738577	7.621099	1	1.843200	5.766039	7.584241
8	-8.522813	-1.239936	-6.002952	8	-8.534581	-1.140855	-5.996961	8	-8.592957	-1.099421	-5.978672
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1	-9.447348	-1.002815	-5.932882	1	-9.456928	-0.895607	-5.926054	1	-9.513199	-0.846555	-5.907168
8	-2.507345	3.689090	11.356995	8	-2.475848	3.669430	11.381238	8	-2.461456	3.749640	11.363191
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8	6.604000	-6.407102	9.364589	8	6.543588	-6.501681	9.352036	8	6.473469	-6.502295	9.367114
1	5.657037	-6.543602	9.349079	1	5.595427	-6.629518	9.335988	1	5.524299	-6.622728	9.353583
1	6.872986	-6.689425	10.238942	1	6.809938	-6.789650	10.225354	1	6.739304	-6.787992	10.241335
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8	8.873182	-1.850934	-8.888597	8	8.855356	-1.899168	-8.884171	8	8.784605	-2.009271	-8.896457
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8	13.336575	8.832086	-0.525058	8	13.414970	8.712033	-0.481201	8	13.444613	8.607464	-0.555783
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1	7.525781	12.226272	-0.414569	1	7.635228	12.158415	-0.358442	1	7.692457	12.099892	-0.438850
8	9.754607	2.298127	5.102301	8	9.773417	2.190206	5.121937	8	9.763119	2.142618	5.087147
1	10.534711	2.255734	4.550255	1	10.553144	2.142763	4.569767	1	10.541330	2.086270	4.533681
1	9.416242	1.402776	5.107216	1	9.426935	1.297953	5.123543	1	9.409623	1.253144	5.093909

8	6.783056	11.776750	-3.759184	8	6.888691	11.727966	-3.704717	8	6.935800	11.658642	-3.781443
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1	6.278896	12.512663	-4.105902	1	6.391259	12.469698	-4.048744	1	6.443532	12.402546	-4.128195
8	12.590407	4.490632	-8.369737	8	12.629973	4.406431	-8.341833	8	12.609860	4.268991	-8.393182
1	11.915264	4.073181	-7.833996	1	11.951030	3.993159	-7.807658	1	11.928763	3.863759	-7.855601
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8	-1.300448	14.636680	4.380206	8	-1.169094	14.631209	4.444835	8	-1.082401	14.666001	4.369396
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8	-9.688503	9.186567	-6.955675	8	-9.605479	9.299240	-6.911348	8	-9.583429	9.344098	-6.943220
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1	8.175623	-0.835279	5.075836	1	8.166048	-0.928614	5.083879	1	8.131159	-0.963579	5.067893
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1	-4.829783	4.186999	-1.866541	1	-6.108086	3.415397	-1.942499	1	-5.772848	2.892537	-1.415393
8	7.514770	-8.480746	-7.886537	8	7.436728	-8.520014	-7.906570	8	7.315845	-8.613759	-7.882900
1	6.643631	-8.100398	-7.776755	1	6.569071	-8.132177	-7.795421	1	6.451495	-8.218541	-7.771978
1	7.349466	-9.365534	-8.212938	1	7.263421	-9.402057	-8.236232	1	7.134929	-9.496043	-8.207796
8	3.835456	13.569674	-2.436728	8	3.957398	13.542703	-2.375784	8	4.021580	13.503053	-2.455817
1	4.732605	13.859078	-2.273458	1	4.857127	13.823346	-2.211417	1	4.923822	13.777409	-2.294639
1	3.931449	12.697905	-2.820905	1	4.045499	12.671518	-2.763163	1	4.102035	12.629278	-2.839001
8	-9.891422	1.344177	0.984815	8	-10.263590	1.591085	0.760149	8	-9.030258	1.364534	2.262796
1	-10.284656	1.843887	1.721058	1	-10.587040	1.924567	1.618655	1	-9.796295	1.913444	2.540444
1	-9.247834	1.986278	0.626891	1	-9.487090	2.169418	0.612196	1	-8.347644	2.043972	2.117647
8	0.446337	6.545045	-10.164402	8	0.505187	6.577624	-10.129388	8	0.498969	6.526790	-10.167590
1	0.313794	5.751466	-10.682827	1	0.365481	5.787193	-10.650736	1	0.351990	5.734893	-10.684695
1	-0.381366	7.019626	-10.236902	1	-0.318167	7.059965	-10.200173	1	-0.320700	7.015251	-10.239161
8	-0.727531	8.282124	-6.464045	8	-0.653123	8.311661	-6.422709	8	-0.638162	8.288396	-6.467358
1	-1.330915	7.700670	-6.926434	1	-1.261730	7.737416	-6.887258	1	-1.252210	7.716656	-6.927819
1	-1.251748	9.055340	-6.255876	1	-1.170314	9.088835	-6.211715	1	-1.148787	9.070669	-6.259237
8	-12.583223	10.047808	-1.115211	8	-12.492677	10.165231	-1.067865	8	-12.451915	10.262001	-1.098444
1	-11.822534	10.109512	-0.538095	1	-11.731501	10.217902	-0.490497	1	-11.689184	10.311549	-0.522855
1	-12.371510	9.330638	-1.713616	1	-12.287443	9.448376	-1.668898	1	-12.253548	9.540558	-1.696284
8	8.770504	-3.740411	-6.319498	8	8.735342	-3.797075	-6.322046	8	8.654816	-3.893357	-6.324626
1	9.691929	-3.880395	-6.534783	1	9.655473	-3.944626	-6.537810	1	9.573318	-4.049235	-6.541468
1	8.302611	-4.404268	-6.826564	1	8.261476	-4.454785	-6.831571	1	8.174757	-4.549845	-6.829911
8	-10.822253	-5.658640	3.684837	8	-10.874742	-5.574115	3.674412	8	-10.948440	-5.465741	3.719398
1	-11.513513	-6.139795	3.229715	1	-11.570310	-6.047296	3.217495	1	-11.648634	-5.935697	3.266235
1	-11.248431	-4.855651	3.987284	1	-11.293634	-4.768408	3.979795	1	-11.360354	-4.655241	4.021571
8	-7.735499	5.947844	1.009974	8	-7.623326	6.050221	1.046086	8	-7.434209	6.189563	1.100597
1	-8.080616	6.136438	1.898676	1	-7.936018	6.250708	1.945242	1	-7.829862	6.316858	1.984040
1	-8.129118	6.652073	0.468344	1	-8.007625	6.770298	0.517977	1	-7.934813	6.820967	0.554926
8	4.442563	-4.991093	-10.083653	8	4.396492	-4.994545	-10.090945	8	4.299069	-5.075372	-10.078884
1	3.806949	-4.694046	-9.432293	1	3.763555	-4.694138	-9.438521	1	3.669837	-4.766729	-9.426722

1	5.293626	-4.857854	-9.665359	1	5.248700	-4.870580	-9.672131	1	5.153071	-4.956043	-9.662384
8	4.188982	10.860399	-3.321790	8	4.286372	10.833604	-3.270798	8	4.327398	10.787010	-3.337900
1	3.692826	10.130539	-2.951320	1	3.783583	10.106922	-2.903035	1	3.819643	10.066161	-2.965507
1	3.823801	10.976481	-4.199257	1	3.922323	10.956227	-4.147846	1	3.962556	10.908120	-4.214829
8	11.558576	-3.442513	7.456712	8	11.525017	-3.575203	7.455273	8	11.473956	-3.624703	7.445861
1	12.200768	-3.344103	8.159270	1	12.168025	-3.485214	8.158212	1	12.119070	-3.536280	8.147068
1	11.860050	-2.846555	6.771007	1	11.831938	-2.979488	6.771777	1	11.784180	-3.034848	6.758784
8	4.046930	-7.042920	9.129540	8	3.980868	-7.113384	9.114552	8	3.905536	-7.094946	9.137769
1	3.836206	-7.839195	8.641271	1	3.762957	-7.905911	8.623346	1	3.680398	-7.888171	8.650972
1	3.197483	-6.697012	9.402608	1	3.134578	-6.760784	9.388858	1	3.062605	-6.734316	9.411980
8	-11.439148	7.620775	-1.143083	8	-11.370686	7.728030	-1.104626	8	-11.349233	7.815873	-1.125217
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1	-11.122787	7.274258	-0.308828	1	-11.057545	7.375586	-0.271640	1	-11.037196	7.465134	-0.291098
8	-11.088774	-0.909671	-6.137370	8	-11.097427	-0.786810	-6.130261	8	-11.153198	-0.725844	-6.108670
1	-11.616878	-0.181007	-5.811944	1	-11.618915	-0.054584	-5.802176	1	-11.668239	0.012101	-5.783226
1	-11.417766	-1.066555	-7.022619	1	-11.427767	-0.937441	-7.016094	1	-11.486502	-0.878287	-6.993083
8	8.291197	-4.372946	7.911692	8	8.249291	-4.477596	7.906700	8	8.192142	-4.498968	7.908285
1	8.108597	-4.265136	6.978986	1	8.067745	-4.364701	6.974391	1	8.009609	-4.389301	6.975783
1	7.757062	-5.122470	8.174776	1	7.708353	-5.223203	8.167004	1	7.645874	-5.238976	8.173390
8	-1.110317	13.824229	-3.610721	8	-0.985775	13.846477	-3.549022	8	-0.921405	13.839943	-3.620776
1	-0.849235	13.047072	-3.117444	1	-0.731796	13.065170	-3.058598	1	-0.672599	13.059116	-3.126950
1	-2.037774	13.939016	-3.402973	1	-1.912166	13.968915	-3.340888	1	-1.846380	13.970722	-3.411427
8	-6.347274	0.829011	11.365295	8	-6.341589	0.844326	11.378865	8	-6.349327	0.955137	11.382619
1	-6.705017	1.567111	11.859050	1	-6.692651	1.583822	11.875326	1	-6.693551	1.699848	11.876063
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8	3.728455	-8.831905	-9.734651	8	3.647513	-8.829973	-9.756109	8	3.520579	-8.903054	-9.723360
1	4.288492	-8.247583	-9.224621	1	4.212796	-8.252642	-9.243910	1	4.091426	-8.327649	-9.215179
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8	-7.720977	8.184412	5.565275	8	-7.648030	8.233191	5.605903	8	-7.609176	8.325158	5.575316
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8	10.907335	-6.385963	-0.946130	8	10.847676	-6.481677	-0.958370	8	10.756761	-6.567720	-0.951761
1	10.980340	-5.532039	-1.371310	1	10.928464	-5.626892	-1.380402	1	10.843426	-5.715716	-1.378228
1	11.260103	-7.002968	-1.587007	1	11.194874	-7.099497	-1.601500	1	11.097783	-7.191462	-1.592474
8	0.814195	-8.108630	-8.194472	8	0.739830	-8.085938	-8.213389	8	0.621968	-8.128416	-8.178635
1	1.265740	-7.311480	-7.914746	1	1.198575	-7.293956	-7.930714	1	1.087507	-7.338675	-7.900838
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8	12.771026	-4.372358	-0.141103	8	12.729518	-4.488054	-0.145867	8	12.655884	-4.584968	-0.152979
1	11.968535	-4.200303	0.350467	1	11.928587	-4.310528	0.346303	1	11.857372	-4.398677	0.339879
1	12.882451	-5.322353	-0.091264	1	12.832308	-5.439198	-0.099521	1	12.751272	-5.536650	-0.102073
8	-8.041397	1.318314	-10.222727	8	-8.029653	1.428430	-10.207274	8	-8.076305	1.444747	-10.202792
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1	-8.753998	1.788972	-9.790252	1	-8.737981	1.903946	-9.773097	1	-8.779989	1.927996	-9.769601
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8	2.349943	-6.881954	6.300447	8	2.285614	-6.926606	6.286005	8	2.206100	-6.908928	6.311683
1	1.660578	-7.443694	5.946796	1	1.591203	-7.480758	5.930262	1	1.506629	-7.459356	5.960095
1	2.865083	-7.459790	6.864052	1	2.795446	-7.511166	6.847499	1	2.712444	-7.494680	6.875088
8	3.656083	-7.702476	-4.676154	8	3.569909	-7.672361	-4.676907	8	3.474854	-7.749098	-4.671890
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8	-6.271856	-0.534369	3.528987	8	-6.364037	-0.500434	3.644394	8	-5.429731	-0.883253	2.995073
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8	8.619739	4.473617	-6.327647	8	8.659169	4.417958	-6.299971	8	8.643400	4.322030	-6.343548
1	9.275590	3.776733	-6.320243	1	9.308664	3.715124	-6.295107	1	9.287347	3.614128	-6.336449
1	8.303599	4.514441	-5.425662	1	8.343348	4.458331	-5.397854	1	8.329727	4.369396	-5.441021
8	-9.470684	10.400352	5.350437	8	-9.377529	10.465703	5.399155	8	-9.321449	10.570181	5.360812
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1	-3.285486	2.047307	10.832417	1	-3.268826	2.036722	10.850592	1	-3.268340	2.120608	10.842300
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1	5.409175	-5.131947	0.747414	1	5.322673	-5.124247	0.739503	1	5.340843	-5.185576	0.700601
1	6.835519	-4.717584	1.045157	1	6.763675	-4.756878	1.028214	1	6.762379	-4.790019	1.043899
8	12.077389	5.545705	-5.025316	8	12.126317	5.453805	-4.993571	8	12.121230	5.337010	-5.049217
1	12.861554	5.846210	-4.566033	1	12.913146	5.745485	-4.533155	1	12.911260	5.624771	-4.591826
1	11.720825	6.334369	-5.432929	1	11.776959	6.247168	-5.398292	1	11.777315	6.131073	-5.457215
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8	11.362033	-1.719710	3.443786	8	11.344412	-1.835931	3.448707	8	11.298970	-1.904089	3.430999
1	11.929213	-1.034593	3.091494	1	11.917816	-1.154700	3.098961	1	11.877014	-1.229156	3.076712
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8	7.107602	-8.931582	0.735252	8	7.024866	-8.998858	0.713486	8	6.917624	-9.046292	0.740245
1	6.572377	-8.138105	0.702511	1	6.496869	-8.200438	0.683646	1	6.395874	-8.243892	0.707451
1	6.472725	-9.645579	0.794358	1	6.383526	-9.707273	0.769940	1	6.270839	-9.749337	0.801516
8	10.431513	-0.426892	-3.446058	8	10.435903	-0.532881	-3.427029	8	10.385721	-0.625831	-3.457815
1	9.739968	-0.996909	-3.828371	1	9.735916	-1.092520	-3.809001	1	9.681028	-1.184674	-3.831819
1	9.914550	0.338611	-3.137610	1	9.930716	0.242367	-3.122237	1	9.886590	0.154985	-3.157502
8	-10.622859	9.546235	1.199418	8	-10.537116	9.637364	1.244977	8	-10.495908	9.730282	1.213138
1	-9.820837	9.853063	1.622491	1	-9.732370	9.935339	1.669206	1	-9.687985	10.024014	1.634276
1	-10.928893	8.831642	1.757052	1	-10.849665	8.923533	1.799965	1	-10.812949	9.021718	1.772312
8	-12.228932	-6.637024	-6.026174	8	-12.289551	-6.503944	-6.040188	8	-12.390135	-6.432878	-5.987603
1	-11.427743	-6.358118	-6.468971	1	-11.485832	-6.230698	-6.481924	1	-11.585182	-6.168187	-6.432293
1	-12.835777	-6.844539	-6.736982	1	-12.898205	-6.703323	-6.751778	1	-13.001775	-6.631001	-6.696980
8	14.987236	-3.870365	1.342604	8	14.950089	-4.011669	1.339763	8	14.883133	-4.118700	1.325847
1	15.606347	-4.592724	1.232388	1	15.562622	-4.739209	1.226913	1	15.489687	-4.851602	1.215432
1	14.251684	-4.096252	0.772798	1	14.212556	-4.228770	0.769101	1	14.142762	-4.332824	0.757741
8	-0.313589	-11.059439	1.207782	8	-0.392019	-11.061029	1.177323	8	-0.477153	-11.072446	1.231769
1	0.543431	-10.590127	1.179164	1	0.448109	-10.561868	1.140243	1	0.384825	-10.612957	1.202668
1	-0.545058	-11.116589	0.266123	1	-0.633922	-11.119530	0.238334	1	-0.722987	-11.104946	0.293075
8	1.054433	-9.693986	9.246895	8	0.964413	-9.737582	9.222034	8	0.868726	-9.694702	9.264364
1	0.795693	-10.450474	9.772482	1	0.698778	-10.493618	9.744824	1	0.598200	-10.445999	9.791459
1	1.007047	-8.954420	9.853107	1	0.923701	-8.999852	9.830963	1	0.835056	-8.953642	9.869669
8	14.530621	-0.310095	-7.490288	8	14.526454	-0.414920	-7.479984	8	14.470040	-0.562804	-7.510948
1	14.839725	0.595630	-7.502490	1	14.843770	0.488000	-7.488841	1	14.794440	0.337530	-7.524956
1	13.578447	-0.238314	-7.420411	1	13.574965	-0.334753	-7.409880	1	13.519356	-0.474787	-7.439363
8	3.377058	5.370082	-10.740306	8	3.425160	5.378224	-10.709501	8	3.408227	5.301517	-10.747465
1	2.589863	4.958442	-11.097403	1	2.634285	4.975066	-11.068140	1	2.613479	4.902824	-11.102515
1	3.584817	6.068494	-11.361071	1	3.639296	6.077005	-11.327684	1	3.626613	5.995492	-11.369563
8	2.353323	16.691285	-0.534215	8	2.503535	16.670622	-0.461852	8	2.596267	16.651860	-0.554704
1	2.765033	17.239628	-1.201216	1	2.920256	17.217654	-1.126815	1	3.015941	17.192261	-1.223222
1	2.044702	15.922773	-1.014157	1	2.187983	15.906716	-0.944630	1	2.273734	15.888065	-1.033024
8	-8.464526	-13.800217	-1.434600	8	-8.590673	-13.717872	-1.474865	8	-8.738987	-13.652869	-1.393533
1	-7.526188	-13.813360	-1.624644	1	-7.652480	-13.738836	-1.664921	1	-7.801375	-13.682181	-1.585338
1	-8.532310	-14.137443	-0.540622	1	-8.661580	-14.057756	-0.582136	1	-8.810768	-13.987721	-0.498974
8	-10.850378	7.535400	2.761228	8	-10.782995	7.622945	2.799367	8	-10.754509	7.725651	2.778082
1	-10.032916	7.049082	2.871588	1	-9.969991	7.128821	2.907968	1	-9.945204	7.225679	2.887547
1	-11.463596	7.112474	3.362311	1	-11.400071	7.203396	3.398866	1	-11.373660	7.313980	3.380894
8	10.791081	-5.692403	-5.178173	8	10.738029	-5.771520	-5.187836	8	10.644173	-5.877848	-5.184506
1	9.995752	-6.193892	-5.356078	1	9.938191	-6.265109	-5.367616	1	9.840112	-6.366004	-5.360227
1	10.653046	-5.327486	-4.304262	1	10.603251	-5.408584	-4.312594	1	10.514026	-5.509493	-4.310827
8	7.550065	1.337424	0.876175	8	7.561381	1.231259	0.939159	8	7.550115	1.115423	0.869202
1	8.264326	0.668504	0.895360	1	8.276101	0.562933	0.963970	1	8.276608	0.459182	0.883225
1	7.315584	1.415563	1.815139	1	7.323966	1.314677	1.876593	1	7.329260	1.193874	1.814607
8	-5.258500	-5.447258	8.765698	8	-5.309664	-5.431962	8.756229	8	-5.372167	-5.342112	8.789416
1	-6.185699	-5.403034	9.000823	1	-6.236440	-5.380187	8.991479	1	-6.298030	-5.281855	9.026238
1	-5.231796	-5.182899	7.845946	1	-5.280494	-5.164475	7.837457	1	-5.342747	-5.079453	7.869260

8	0.557388	3.596313	-8.170508	8	0.589316	3.620687	-8.146356	8	0.563807	3.579221	-8.169942
1	0.353422	2.741000	-8.547253	1	0.377619	2.768654	-8.526254	1	0.344638	2.726998	-8.545148
1	1.305704	3.909657	-8.678153	1	1.340482	3.929089	-8.652816	1	1.316355	3.879156	-8.679426
8	-4.093413	-6.114145	4.337001	8	-4.172470	-6.120095	4.317707	8	-4.119459	-6.042320	4.458498
1	-4.299733	-6.170332	3.380822	1	-4.365354	-6.180763	3.359883	1	-4.129366	-6.367652	3.536457
1	-3.242994	-5.635776	4.321324	1	-3.331361	-5.625281	4.313066	1	-3.692109	-5.172610	4.353902
8	11.921191	1.992207	3.448944	8	11.937252	1.870711	3.467548	8	11.921025	1.797811	3.430101
1	12.160155	1.246220	2.899322	1	12.169472	1.124613	2.915193	1	12.146246	1.047155	2.881031
1	12.560232	2.669738	3.225570	1	12.582435	2.543229	3.246693	1	12.571040	2.464108	3.204603
8	1.112623	-7.753345	-0.536098	8	1.043665	-7.638807	-0.601754	8	1.181874	-7.754832	-0.548779
1	1.561092	-6.883163	-0.438219	1	1.475910	-6.761982	-0.492125	1	1.604781	-6.869748	-0.474330
1	0.202164	-7.483412	-0.749017	1	0.129725	-7.381676	-0.819041	1	0.257504	-7.515662	-0.740825
8	-6.094462	-9.107956	7.362474	8	-6.178731	-9.079730	7.339510	8	-6.272799	-8.989941	7.392709
1	-6.083431	-8.831495	8.278288	1	-6.165255	-8.806753	8.256335	1	-6.255323	-8.712504	8.308126
1	-5.627030	-9.943739	7.358428	1	-5.718907	-9.919703	7.332406	1	-5.819622	-9.833539	7.388902
8	-0.874578	-5.481356	-3.445486	8	-0.951529	-5.388482	-3.486201	8	-0.864259	-5.593044	-3.460207
1	-1.074136	-6.206356	-2.821985	1	-1.159353	-6.111812	-2.862917	1	-1.014197	-6.332907	-2.841468
1	-0.089119	-5.072932	-3.015826	1	-0.172638	-4.977994	-3.043724	1	-0.100043	-5.140485	-3.032180
8	2.991989	0.050112	4.507132	8	2.903715	-0.018909	4.460905	8	3.052003	0.178887	4.728169
1	3.485908	-0.792100	4.475154	1	3.412688	-0.852580	4.438370	1	3.445861	-0.707118	4.607347
1	2.704008	0.077126	5.438839	1	2.626674	0.019857	5.395054	1	2.646908	0.097709	5.611087
8	-3.353770	-0.946920	11.988437	8	-3.364379	-0.960995	11.995582	8	-3.385191	-0.870508	12.002478
1	-3.416440	-0.520897	12.844040	1	-3.423239	-0.537572	12.852744	1	-3.438984	-0.442359	12.857622
1	-2.463383	-1.295695	11.958831	1	-2.477194	-1.317729	11.964727	1	-2.500908	-1.234377	11.971654
8	-5.169192	-0.420834	-4.596530	8	-4.423652	-0.438347	-4.603033	8	-5.139009	0.090817	-4.707424
1	-5.411697	-0.935377	-5.385990	1	-4.611137	-1.063745	-5.317733	1	-5.334353	-0.591574	-5.370668
1	-5.948643	0.139749	-4.462479	1	-5.280418	0.033632	-4.521759	1	-6.010604	0.484279	-4.544939
8	-8.342458	-3.951415	-7.959611	8	-8.378713	-3.846640	-7.963579	8	-8.462377	-3.816138	-7.932017
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8	6.731531	6.323713	2.734225	8	6.610926	6.198930	2.688929	8	6.440548	5.969671	2.585089
1	7.329969	5.564807	2.818031	1	7.230949	5.457783	2.775485	1	7.098635	5.266329	2.696656
1	6.280920	6.327642	3.603655	1	6.205513	6.231198	3.580553	1	6.102217	6.080414	3.498126
8	8.135304	1.043562	-5.397563	8	8.154970	0.975588	-5.379015	8	8.100573	0.886366	-5.416430
1	8.237366	1.317394	-4.471034	1	8.267426	1.244537	-4.452535	1	8.216483	1.162206	-4.492620
1	8.082549	0.074085	-5.321166	1	8.087603	0.006733	-5.305656	1	8.027914	-0.081475	-5.335179
8	5.957715	0.849689	-8.726268	8	5.964521	0.827203	-8.712015	8	5.915688	0.740641	-8.732238
1	5.191621	1.012576	-9.276333	1	5.199976	0.999063	-9.261506	1	5.151413	0.915779	-9.281069
1	6.089613	1.669910	-8.250207	1	6.103827	1.644434	-8.232933	1	6.062394	1.559130	-8.257532
8	0.360113	-11.593564	-4.522091	8	0.253860	-11.580095	-4.553876	8	0.115877	-11.600315	-4.500712
1	1.277373	-11.377016	-4.686949	1	1.173060	-11.371281	-4.717902	1	1.036361	-11.399579	-4.667599
1	0.218345	-11.357786	-3.605438	1	0.114173	-11.346414	-3.636366	1	-0.020112	-11.360962	-3.584109
8	10.032268	10.610031	0.943603	8	10.126839	10.514493	0.993868	8	10.173765	10.443144	0.916744
1	9.766467	11.047725	0.135067	1	9.865081	10.957556	0.186939	1	9.913877	10.884222	0.108126
1	10.549932	11.265650	1.412132	1	10.650401	11.163656	1.464827	1	10.703374	11.090501	1.383408
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8	3.682831	9.991661	-7.669528	8	3.772665	9.985504	-7.621723	8	3.798244	9.921274	-7.683498
1	3.103296	10.278628	-6.964604	1	3.195710	10.275126	-6.915770	1	3.225015	10.218958	-6.977863
1	4.546728	10.319738	-7.418695	1	4.639488	10.304798	-7.369651	1	4.668063	10.234975	-7.434744
8	6.855479	-4.446597	-8.970168	8	6.814173	-4.476084	-8.975371	8	6.723007	-4.570432	-8.970709
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1	7.306185	-3.648203	-8.693400	1	7.272090	-3.682839	-8.695650	1	7.187722	-3.779436	-8.695871
8	0.629087	1.442294	-11.853525	8	0.641716	1.479674	-11.837273	8	0.591890	1.419459	-11.850186
1	0.386732	1.352505	-10.931392	1	0.398491	1.388697	-10.915486	1	0.349817	1.335006	-10.927474
1	1.310698	0.784241	-11.988551	1	1.317334	0.815960	-11.974695	1	1.261981	0.749759	-11.985617
8	1.309807	1.229861	10.963198	8	1.318845	1.177106	10.978539	8	1.312667	1.225486	10.965471
1	1.796939	0.445239	11.217842	1	1.798815	0.387162	11.230313	1	1.786907	0.433048	11.220249
1	1.985806	1.869307	10.740709	1	2.000638	1.811202	10.758432	1	1.998988	1.853079	10.740842
8	11.619089	-4.503784	2.564068	8	11.576240	-4.618968	2.558758	8	11.507073	-4.693277	2.554545
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8	-1.690248	-0.049183	-6.959844	8	-1.666241	0.151182	-6.886585	8	-1.749470	0.165909	-6.890313
1	-2.189423	0.313807	-6.205673	1	-2.011486	0.636951	-6.119072	1	-2.173977	0.642049	-6.156777
1	-1.187862	-0.772314	-6.530308	1	-1.222674	-0.609351	-6.458912	1	-1.312430	-0.574702	-6.425836
8	5.458200	-4.498965	-3.286778	8	5.418093	-4.520433	-3.288383	8	5.375753	-4.573531	-3.296235
1	5.708602	-3.878017	-2.583757	1	5.664699	-3.911748	-2.574003	1	5.644022	-3.960722	-2.592629
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8	-2.080353	15.676351	-0.630075	8	-1.939167	15.696349	-0.561616	8	-1.854164	15.712171	-0.640794
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1	-2.875111	16.205690	-0.564121	1	-2.729091	16.232637	-0.493746	1	-2.639700	16.255004	-0.574047
8	6.102458	12.453168	0.383915	8	6.213967	12.395286	0.440817	8	6.274721	12.351954	0.362024
1	5.236369	12.779858	0.628933	1	5.350862	12.728923	0.687003	1	5.414770	12.693612	0.608243
1	6.003070	11.501163	0.365544	1	6.105940	11.444296	0.418938	1	6.159163	11.401748	0.345123
8	6.158162	6.161507	-5.772728	8	6.212980	6.126077	-5.738938	8	6.211878	6.052169	-5.786238
1	5.239752	5.893271	-5.755738	1	5.292171	5.866130	-5.722970	1	5.289085	5.799576	-5.767145
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8	14.247414	2.702960	-6.029773	8	14.270513	2.595189	-6.008401	8	14.240789	2.456539	-6.053957
1	14.171113	3.592026	-6.377898	1	14.202313	3.486185	-6.353254	1	14.178913	3.346313	-6.403133
1	13.699775	2.705853	-5.243787	1	13.722865	2.600162	-5.222431	1	13.694785	2.469756	-5.266940
8	2.084116	0.877304	-5.329379	8	2.189652	0.885948	-5.387441	8	2.055708	0.832548	-5.379520
1	2.682589	1.552391	-4.962507	1	2.862078	1.500774	-5.041981	1	2.701484	1.474749	-5.032892
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8	7.371561	4.671013	-3.838989	8	7.469249	4.586255	-3.845958	8	7.458520	4.496067	-3.898982
1	7.168330	5.222067	-3.056968	1	7.328383	5.119541	-3.037912	1	7.328224	5.024789	-3.086079
1	6.973691	3.815471	-3.578919	1	7.056915	3.736392	-3.588355	1	7.026312	3.653291	-3.650745
8	5.090143	-11.020641	-7.259949	8	4.989094	-11.040076	-7.289426	8	4.849687	-11.111325	-7.248299
1	5.858401	-11.281593	-7.768735	1	5.754986	-11.306119	-7.799140	1	5.612429	-11.385942	-7.758188
1	5.436042	-10.821375	-6.390059	1	5.336725	-10.847161	-6.418795	1	5.200583	-10.916813	-6.379334
8	3.681563	8.539333	5.986580	8	3.757232	8.483004	6.028947	8	3.798531	8.487121	5.974532
1	3.889766	9.401909	6.347599	1	3.973232	9.342320	6.393146	1	4.022028	9.346514	6.333993
1	2.967844	8.703580	5.370176	1	3.045078	8.655993	5.413125	1	3.086519	8.662643	5.359260
8	11.753248	-7.065787	1.412655	8	11.687214	-7.177829	1.397929	8	11.595543	-7.258698	1.406329
1	11.522566	-6.353935	2.008453	1	11.462962	-6.466110	1.996334	1	11.378112	-6.542253	2.001605
1	11.510142	-6.741507	0.545576	1	11.447124	-6.848166	0.532040	1	11.356310	-6.931479	0.539277
8	-5.670105	6.624099	7.711407	8	-5.611566	6.646432	7.746356	8	-5.580957	6.733095	7.719656
1	-6.242943	5.924101	7.397395	1	-6.190714	5.952825	7.429749	1	-6.166189	6.042504	7.407674
1	-5.408095	7.093286	6.919316	1	-5.345249	7.116132	6.956007	1	-5.312545	7.196727	6.926439
8	9.198222	8.683554	7.219258	8	9.274884	8.572589	7.262358	8	9.319195	8.539342	7.196556
1	8.362252	9.118362	7.388977	1	8.442885	9.014342	7.433645	1	8.491050	8.988493	7.367274
1	9.722769	9.343567	6.765033	1	9.805435	9.229479	6.810586	1	9.853991	9.189763	6.740450
8	-0.254034	14.178068	1.092249	8	-0.126652	14.175216	1.155251	8	-0.050225	14.185382	1.080081
1	-0.621951	14.722661	0.396515	1	-0.489559	14.725684	0.461512	1	-0.410185	14.735223	0.384313
1	0.151635	14.802270	1.694598	1	0.284626	14.793488	1.759909	1	0.367130	14.803402	1.680819
8	-11.714442	5.242994	-4.667710	8	-11.667306	5.365832	-4.637991	8	-11.671582	5.438475	-4.646112
1	-12.237953	4.443919	-4.610714	1	-12.198056	4.571340	-4.583955	1	-12.208464	4.648474	-4.587048
1	-10.922148	5.046512	-4.166931	1	-10.876865	5.160322	-4.137907	1	-10.881777	5.229238	-4.146571
8	-11.086353	2.562137	3.161919	8	-11.064148	2.650589	3.181742	8	-11.074048	2.757638	3.185914
1	-11.493002	2.533580	4.028590	1	-11.471101	2.622537	4.048287	1	-11.479459	2.737124	4.053392
1	-11.671564	3.109353	2.639442	1	-11.644328	3.205016	2.661261	1	-11.650892	3.314018	2.663811
8	0.921100	-8.194094	-4.951126	8	0.843069	-8.177839	-4.965579	8	0.734101	-8.206105	-4.938819
1	1.898583	-8.221300	-4.946747	1	1.820960	-8.194709	-4.954307	1	1.711310	-8.241093	-4.941267
1	0.741514	-7.483231	-5.582442	1	0.660736	-7.470084	-5.599592	1	0.555449	-7.490213	-5.564254
8	1.724498	-3.754089	12.498573	8	1.688154	-3.816019	12.495577	8	1.645695	-3.762760	12.506767
1	1.480959	-3.981025	11.601887	1	1.442629	-4.037434	11.598052	1	1.396622	-3.986710	11.610850
1	0.971095	-4.016944	13.026198	1	0.932357	-4.073962	13.022202	1	0.888955	-4.012101	13.036172
8	-8.133868	-2.827778	3.073900	8	-8.185594	-2.894476	3.115331	8	-7.990527	-3.070665	3.177334
1	-8.184738	-2.665136	4.038326	1	-8.208418	-2.662565	4.066621	1	-8.221336	-2.736880	4.062385
1	-9.030189	-2.629030	2.782854	1	-9.097243	-2.746181	2.843845	1	-8.014378	-2.263243	2.637520
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1	-1.591499	-3.255866	9.169492	1	-1.622945	-3.275460	9.168226	1	-1.667753	-3.212723	9.183309
1	-1.557786	-2.762689	7.738838	1	-1.584651	-2.777347	7.739397	1	-1.628421	-2.722069	7.751930
8	6.200646	-9.934841	4.493810	8	6.108568	-10.007664	4.468291	8	6.000989	-10.029079	4.501862
1	5.292005	-10.222244	4.577390	1	5.197350	-10.287109	4.550778	1	5.087766	-10.300915	4.587551
1	6.701736	-10.575115	4.999290	1	6.603787	-10.654317	4.971432	1	6.492114	-10.677097	5.007254
8	-13.312034	2.975568	4.962460	8	-13.286112	3.077584	4.983708	8	-13.288937	3.211137	4.990113
1	-14.173948	3.216754	5.300487	1	-14.145825	3.325342	5.322587	1	-14.145987	3.467356	5.329448
1	-13.461591	2.785427	4.036356	1	-13.437323	2.892218	4.056905	1	-13.443474	3.022344	4.064551
8	-5.980816	8.362111	-1.924432	8	-5.905792	8.422641	-1.883033	8	-5.880619	8.463467	-1.917908
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8	6.745549	1.826257	3.564822	8	6.703829	1.764817	3.615337	8	6.856696	1.546856	3.530011
1	5.793098	2.008650	3.391155	1	5.758004	1.926944	3.393970	1	5.939218	1.896446	3.603975
1	6.687697	1.046655	4.148305	1	6.633478	0.981464	4.193313	1	6.812356	0.770099	4.118805
8	12.932552	-1.889427	5.718799	8	12.913162	-2.028272	5.723140	8	12.870745	-2.097437	5.703258
1	12.683661	-1.967226	4.797795	1	12.663642	-2.100419	4.801847	1	12.618804	-2.172213	4.782833
1	13.556868	-2.601155	5.859401	1	13.530981	-2.746153	5.861145	1	13.483167	-2.819471	5.843634
8	-3.403043	3.428769	-9.616471	8	-3.372369	3.494434	-9.593077	8	-3.401662	3.476995	-9.608169

1	-4.023682	2.700153	-9.641931	1	-3.999598	2.771583	-9.621243	1	-4.034621	2.758982	-9.631472
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8	9.024644	9.751218	-5.977074	8	9.111954	9.690338	-5.929961	8	9.138447	9.592457	-6.000848
1	9.354995	10.063324	-5.134415	1	9.445065	9.996328	-5.086147	1	9.475660	9.900020	-5.159239
1	8.335683	9.128113	-5.748430	1	8.417346	9.072679	-5.703639	1	8.439454	8.981433	-5.770061
8	3.616864	-10.889607	-2.458264	8	3.516721	-10.913339	-2.487348	8	3.388054	-10.949004	-2.444010
1	4.295700	-10.244180	-2.656049	1	4.201404	-10.273380	-2.682731	1	4.077360	-10.315448	-2.643951
1	2.810576	-10.376818	-2.397018	1	2.715118	-10.393479	-2.424247	1	2.590699	-10.422529	-2.381927
8	1.310781	-0.571352	-7.671790	8	1.304799	-0.555453	-7.662951	8	1.247346	-0.599966	-7.667043
1	1.654277	0.015449	-6.997905	1	1.653560	0.025719	-6.986899	1	1.602038	-0.018194	-6.994602
1	0.630858	-1.075853	-7.226764	1	0.620290	-1.055394	-7.219812	1	0.559817	-1.092274	-7.220051
8	3.162588	-1.626561	-5.203506	8	3.133943	-1.664411	-5.239552	8	3.082626	-1.685424	-5.237244
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1	2.842358	-0.708297	-5.277312	1	2.854013	-0.733624	-5.322208	1	2.775104	-0.763801	-5.322165
8	-14.072874	6.094952	1.923586	8	-14.018377	6.214910	1.956306	8	-14.002576	6.338986	1.948489
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8	0.802496	8.337493	8.062732	8	0.876301	8.299678	8.104233	8	0.920440	8.336886	8.056406
1	1.611493	7.828722	8.005791	1	1.680650	7.783795	8.045450	1	1.720580	7.814388	7.998617
1	0.215927	7.797757	8.592240	1	0.284817	7.763345	8.631728	1	0.325816	7.807875	8.587751
8	15.572322	-1.507899	2.594647	8	15.556512	-1.659237	2.600515	8	15.510611	-1.764858	2.573598
1	16.321997	-1.675166	3.166118	1	16.304597	-1.835406	3.171394	1	16.258435	-1.944068	3.143870
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8	-9.464168	-8.971827	-8.147543	8	-9.545949	-8.855934	-8.170031	8	-9.669449	-8.817038	-8.111063
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1	-9.404952	11.865810	4.004662	1	-9.298396	11.935446	4.058785	1	-9.233448	12.032544	4.012943
8	13.372427	-4.565367	-6.487555	8	13.329596	-4.663160	-6.492963	8	13.241751	-4.796492	-6.500295
1	12.705220	-5.200624	-6.228269	1	12.656630	-5.293282	-6.236043	1	12.564363	-5.419995	-6.238889
1	13.304555	-3.866457	-5.836518	1	13.268026	-3.966064	-5.839361	1	13.186994	-4.095676	-5.850072
8	8.875890	-2.874444	-0.900368	8	8.848430	-2.940336	-0.885959	8	8.819288	-3.054934	-0.909520
1	8.899456	-3.450407	-0.107990	1	8.867108	-3.525742	-0.100174	1	8.825698	-3.617363	-0.106690
1	7.963276	-2.978894	-1.202971	1	7.933935	-3.030847	-1.187278	1	7.901577	-3.131932	-1.205817
8	1.122582	-3.609970	9.814812	8	1.087763	-3.656567	9.812342	8	1.041164	-3.611976	9.823959
1	1.891400	-3.144807	9.483221	1	1.860797	-3.197186	9.482493	1	1.817125	-3.160360	9.490286
1	0.387572	-3.232582	9.330290	1	0.356245	-3.270740	9.329184	1	0.311733	-3.222809	9.340324
8	-8.037185	3.320362	0.398623	8	-8.246383	3.434042	0.784986	8	-7.296495	3.433890	1.679367
1	-7.948901	4.273555	0.597427	1	-7.994672	4.375003	0.843705	1	-7.303161	4.380656	1.468504
1	-7.445076	3.221044	-0.369047	1	-7.830209	3.164091	-0.056910	1	-7.224362	3.024851	0.791810
8	-12.695720	-7.012490	2.519808	8	-12.760343	-6.906602	2.504336	8	-12.846836	-6.789141	2.559746
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8	-0.156212	-2.043999	2.597802	8	-0.306966	-2.016677	2.594597	8	0.214163	-1.211714	1.903180
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1	-0.673081	-2.701382	2.076300	1	-0.841534	-2.688813	2.111221	1	0.225217	-1.880529	1.203134
8	-4.135838	-10.519226	3.992584	8	-4.232761	-10.496317	3.964523	8	-4.344864	-10.438665	4.021015
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8	-2.211346	-0.237858	-11.349835	8	-2.213891	-0.176459	-11.339879	8	-2.275664	-0.211596	-11.338851
1	-1.404340	-0.677970	-11.081496	1	-1.410934	-0.624866	-11.073131	1	-1.475727	-0.664984	-11.071451
1	-2.190602	-0.263245	-12.306965	1	-2.193310	-0.198512	-12.297095	1	-2.257189	-0.238590	-12.295984
8	-0.285749	11.901232	5.115977	8	-0.179328	11.883970	5.170572	8	-0.112842	11.914700	5.106924
1	0.665411	11.840119	5.022138	1	0.771244	11.814569	5.076545	1	0.836962	11.837335	5.011364
1	-0.461073	11.562817	5.993283	1	-0.357780	11.543936	6.046620	1	-0.292198	11.580463	5.985015
8	7.958770	8.320613	-2.001306	8	8.032849	8.254850	-1.959526	8	8.056084	8.185368	-2.021145
1	8.021510	9.173650	-1.572975	1	8.103301	9.105701	-1.528057	1	8.134107	9.037779	-1.594083
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1	-5.205645	-0.794095	8.043891	1	-5.214507	-0.776846	8.051554	1	-5.241768	-0.691468	8.061246
8	3.230364	0.464216	-10.068799	8	3.233877	0.471454	-10.056060	8	3.179619	0.399733	-10.069078
1	3.046760	-0.059525	-9.288417	1	3.045470	-0.053466	-9.277618	1	2.988655	-0.119792	-9.287645
1	2.953873	-0.089163	-10.798670	1	2.952425	-0.076702	-10.787973	1	2.892381	-0.149835	-10.797678

8	1.388865	-9.476918	-2.598326	8	1.317685	-9.445635	-2.604189	8	1.180021	-9.513250	-2.602870
1	1.121330	-8.930645	-3.356518	1	1.049107	-8.916090	-3.374043	1	0.919233	-8.960054	-3.358681
1	1.224665	-8.881395	-1.843847	1	1.165166	-8.828896	-1.864356	1	1.109160	-8.892713	-1.855074
8	3.037466	-1.920286	9.268486	8	3.017950	-1.982340	9.272310	8	2.983385	-1.955743	9.271731
1	3.206700	-1.387110	10.045279	1	3.191962	-1.453585	10.051068	1	3.163128	-1.424496	10.047484
1	2.500911	-1.361509	8.706651	1	2.486532	-1.416651	8.712516	1	2.455310	-1.388682	8.710162
8	-12.336166	-3.382142	4.394901	8	-12.367973	-3.286592	4.392792	8	-12.422152	-3.162954	4.429265
1	-12.371827	-2.742492	5.106541	1	-12.397875	-2.649269	5.106779	1	-12.445592	-2.521857	5.140109
1	-12.296668	-2.852070	3.598527	1	-12.323607	-2.753975	3.598375	1	-12.375195	-2.634677	3.632105
8	-0.752124	11.352795	-2.631869	8	-0.650108	11.368307	-2.579257	8	-0.603312	11.364076	-2.639279
1	-0.311437	11.620183	-1.825102	1	-0.207069	11.628710	-1.771496	1	-0.156606	11.625007	-1.833709
1	-1.201995	10.539671	-2.400835	1	-1.107360	10.558456	-2.351235	1	-1.066468	10.559005	-2.406298
8	1.793782	-8.220342	3.540832	8	1.722365	-8.209959	3.515971	8	1.775969	-8.182229	3.492538
1	2.118217	-7.378314	3.163792	1	2.033158	-7.360428	3.145391	1	2.129503	-7.351452	3.119393
1	0.826467	-8.082647	3.532119	1	0.753202	-8.083011	3.519273	1	0.820397	-7.983692	3.548818
8	6.307798	-10.483510	8.246755	8	6.210465	-10.571090	8.219196	8	6.106015	-10.574556	8.255333
1	5.616176	-9.822261	8.249376	1	5.524875	-9.903602	8.224224	1	5.425717	-9.901664	8.258375
1	7.115784	-9.985286	8.373717	1	7.022932	-10.080694	8.348022	1	6.922579	-10.089946	8.380092
8	-11.120483	3.777894	7.161368	8	-11.087523	3.851880	7.185638	8	-11.079878	3.979054	7.183781
1	-11.427556	4.192607	6.355201	1	-11.390761	4.272327	6.380991	1	-11.381418	4.397856	6.377640
1	-11.739364	3.064041	7.314384	1	-11.712872	3.143118	7.336002	1	-11.710485	3.276004	7.338931
8	-11.818364	-3.652014	-5.468565	8	-11.851936	-3.524857	-5.471582	8	-11.927920	-3.454532	-5.434793
1	-11.496003	-4.141763	-6.224445	1	-11.533981	-4.014729	-6.229246	1	-11.615364	-3.950674	-6.190622
1	-11.781463	-2.735352	-5.743180	1	-11.806693	-2.607565	-5.742820	1	-11.876001	-2.538992	-5.710711
8	2.004156	11.486446	8.583391	8	2.106468	11.435651	8.636523	8	2.176343	11.465678	8.570547
1	2.821547	11.907317	8.315076	1	2.927666	11.850068	8.369791	1	3.000240	11.872269	8.300117
1	1.887988	10.769930	7.958522	1	1.983843	10.722525	8.009017	1	2.046838	10.750416	7.946865
8	-0.674019	1.382791	-9.129338	8	-0.662072	1.421981	-9.113374	8	-0.706810	1.385652	-9.123456
1	-1.276647	1.024756	-9.780588	1	-1.267879	1.071833	-9.765961	1	-1.316674	1.037039	-9.773081
1	-0.999774	1.048551	-8.293170	1	-0.990908	1.087638	-8.278453	1	-1.036584	1.058085	-8.286222
8	-6.978090	12.661848	-4.391572	8	-6.863805	12.740307	-4.334369	8	-6.809539	12.776260	-4.388939
1	-7.100223	13.582735	-4.160200	1	-6.977587	13.661407	-4.099614	1	-6.915588	13.699389	-4.158576
1	-6.563370	12.274818	-3.620502	1	-6.452671	12.346691	-3.564713	1	-6.399965	12.383262	-3.618136
8	-12.987241	-7.923537	-0.108267	8	-13.059935	-7.805287	-0.127085	8	-13.158808	-7.698563	-0.066543
1	-12.404840	-7.442119	-0.695276	1	-12.473145	-7.327021	-0.712296	1	-12.569451	-7.227868	-0.655303
1	-12.809957	-8.844936	-0.297675	1	-12.891011	-8.727554	-0.319876	1	-12.997543	-8.623085	-0.255046
8	-8.306104	-7.782926	-3.116587	8	-8.377498	-7.696119	-3.134688	8	-8.481737	-7.641347	-3.083916
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1	-5.536298	-1.544100	4.859235	1	-5.619012	-1.514015	4.922085	1	-5.307286	-1.699407	4.635070
1	-4.524997	-2.611087	4.501606	1	-4.614740	-2.585496	4.555395	1	-4.148053	-2.644349	4.860815
8	-11.645767	4.524441	-1.541631	8	-11.605383	4.635187	-1.514576	8	-11.609112	4.722969	-1.519205
1	-10.780668	4.125324	-1.630551	1	-10.743938	4.228561	-1.604930	1	-10.751081	4.309116	-1.609227
1	-11.574615	5.357846	-2.007377	1	-11.526634	5.469620	-1.977248	1	-11.524727	5.554434	-1.986206
8	1.182294	9.469391	-9.656600	8	1.267632	9.493277	-9.610799	8	1.285402	9.438893	-9.665121
1	1.130035	8.513671	-9.662845	1	1.206698	8.538100	-9.620564	1	1.216926	8.484190	-9.669981
1	1.782942	9.672703	-8.940054	1	1.870049	9.688489	-8.893487	1	1.890785	9.632926	-8.949989
8	2.624956	-5.835561	2.456099	8	2.513016	-5.798107	2.434159	8	2.636624	-5.772145	2.389426
1	2.525137	-5.742356	1.482417	1	2.411696	-5.679639	1.464279	1	2.537365	-5.719057	1.414457
1	2.337295	-4.961970	2.769225	1	2.224108	-4.933298	2.770841	1	2.329283	-4.894574	2.668488
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1	-9.571031	7.301896	7.134354	1	-9.506135	7.361742	7.171653	1	-9.470923	7.476220	7.149086
8	7.291894	-3.983249	3.679859	8	7.246932	-4.055108	3.675204	8	7.170813	-4.061141	3.672758
1	6.809067	-3.784208	4.499174	1	6.767767	-3.855404	4.496785	1	6.694091	-3.860052	4.496660
1	6.568420	-4.131073	3.042032	1	6.520549	-4.180854	3.035818	1	6.442914	-4.182658	3.035791
8	2.675547	-13.433689	-4.954589	8	2.552521	-13.439566	-4.993055	8	2.398928	-13.480027	-4.935120
1	2.918945	-14.358415	-4.987317	1	2.787514	-14.366336	-5.029177	1	2.626541	-14.408791	-4.967063
1	2.522126	-13.193398	-5.869243	1	2.401353	-13.194527	-5.906824	1	2.247852	-13.238369	-5.849803
8	15.781852	3.335126	1.636142	8	15.810078	3.185180	1.659848	8	15.800428	3.072651	1.608178
1	14.899495	3.582827	1.911704	1	14.929986	3.439868	1.936286	1	14.922929	3.335649	1.885078
1	15.940318	2.495651	2.067714	1	15.960884	2.342719	2.088333	1	15.945459	2.231177	2.040578
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1	-6.602562	-2.620370	9.388023	1	-6.628046	-2.595296	9.388902	1	-6.666885	-2.492012	9.410481
1	-7.747331	-3.412686	8.792605	1	-7.779919	-3.374988	8.790529	1	-7.826069	-3.265573	8.818302
8	7.214690	11.494979	3.422367	8	7.317234	11.415863	3.475765	8	7.376364	11.379026	3.399650
1	7.652187	10.687317	3.690516	1	7.747360	10.603280	3.740957	1	7.800610	10.564410	3.668057
1	7.753379	12.194257	3.793425	1	7.862225	12.108849	3.849414	1	7.927549	12.069549	3.768744
8	11.141853	3.446293	7.403899	8	11.170866	3.317251	7.427798	8	11.174053	3.270105	7.384564
1	10.536696	3.343197	6.669602	1	10.564851	3.222357	6.693102	1	10.565828	3.176327	6.651554

1	11.244381	4.392807	7.498860	1	11.281978	4.262439	7.526246	1	11.292805	4.214868	7.478056
8	-2.271826	-1.281013	4.052207	8	-2.372575	-1.302961	4.115648	8	-2.335860	-1.104350	2.742729
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8	-2.986645	8.814415	-4.127537	8	-2.851688	8.791374	-4.055911	8	-2.961652	8.721254	-3.899783
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8	5.534226	-3.278682	8.906456	8	5.502298	-3.362011	8.905379	8	5.456043	-3.356780	8.906798
1	4.583277	-3.179008	8.945798	1	4.552291	-3.253852	8.945052	1	4.506999	-3.240935	8.947809
1	5.749283	-3.821731	9.665443	1	5.712361	-3.909780	9.662370	1	5.663312	-3.902402	9.666107
8	8.867981	-0.649191	8.739748	8	8.859804	-0.762305	8.748478	8	8.833598	-0.784451	8.730233
1	9.801856	-0.846002	8.806041	1	9.791850	-0.967830	8.814081	1	9.764127	-0.996990	8.795021
1	8.712041	0.012079	9.413777	1	8.709827	-0.102131	9.424930	1	8.690192	-0.119745	9.403665
8	-5.554905	-11.199373	0.967498	8	-5.657728	-11.152413	0.936901	8	-5.781063	-11.098611	0.999543
1	-6.289990	-11.652471	1.381154	1	-6.396927	-11.600337	1.348858	1	-6.522935	-11.538628	1.415201
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8	-3.626440	-5.632074	-4.139058	8	-3.664824	-5.512716	-4.260444	8	-3.570490	-5.787512	-3.932140
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8	-7.595693	1.083851	-4.887111	8	-6.858311	0.638870	-4.740144	8	-7.757664	1.161319	-4.796952
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8	-9.626352	-4.063824	-0.683303	8	-8.578060	-3.499619	-0.590767	8	-8.689721	-4.252923	-1.059231
1	-10.552347	-3.863479	-0.893207	1	-9.259764	-2.833675	-0.419417	1	-9.261059	-3.500520	-1.242517
1	-9.308467	-3.220667	-0.324723	1	-7.762592	-2.961410	-0.603949	1	-7.951772	-3.853127	-0.566792
8	-2.883838	10.562045	0.342356	8	-2.699161	10.617812	0.276605	8	-2.553965	10.632559	0.120688
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8	-5.564399	9.993661	0.331608	8	-5.386734	10.004358	0.352601	8	-5.268224	10.181576	0.209255
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1	-4.634378	10.278526	0.408456	1	-4.458281	10.297076	0.407858	1	-4.325728	10.426602	0.226503
8	-9.545804	-8.862204	0.401046	8	-9.627201	-8.777033	0.378900	8	-9.732820	-8.694815	0.437508
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1	-9.780724	-8.032143	0.816861	1	-9.854603	-7.946409	0.797760	1	-9.952827	-7.860341	0.852652
8	-3.112107	1.192997	4.663841	8	-3.179923	1.168499	4.725370	8	-1.444883	1.146408	3.894258
1	-2.971010	1.147732	5.620536	1	-3.031208	1.129793	5.681241	1	-1.027798	0.778892	4.695261
1	-2.813447	0.308722	4.370482	1	-2.896416	0.276925	4.437746	1	-1.839325	0.344135	3.493532
8	-0.592923	8.000900	2.947067	8	-0.311004	7.940203	2.386271	8	-0.481485	8.015995	2.249198
1	-1.070474	8.132407	2.103090	1	-0.866702	8.063780	1.593603	1	-1.018196	8.082451	1.440870
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8	8.568416	2.902427	-10.058533	8	8.593849	2.861039	-10.036616	8	8.558275	2.747037	-10.072211
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1	8.023685	3.236715	-10.771662	1	8.052226	3.202881	-10.748530	1	8.017926	3.089581	-10.784756
8	-5.364521	1.939222	-11.220364	8	-5.347178	2.028672	-11.202517	8	-5.391200	2.018837	-11.206336
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8	1.678537	-13.279650	-2.419028	8	1.556768	-13.285811	-2.456983	8	1.409540	-13.305763	-2.397884
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1	2.181921	-12.628867	-1.929552	1	2.066006	-12.641432	-1.965096	1	1.924829	-12.662972	-1.910239
8	11.068642	6.089748	3.012394	8	11.121976	5.977404	3.046049	8	11.137274	5.908650	2.989651
1	10.967899	6.641846	2.237320	1	11.026306	6.533243	2.273008	1	11.044426	6.461360	2.214027
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8	13.670228	-4.780832	4.427103	8	13.624646	-4.921484	4.420840	8	13.556787	-5.002637	4.414061
1	14.238170	-4.202337	3.916141	1	14.197854	-4.346294	3.912031	1	14.133479	-4.434534	3.901244
1	14.134781	-4.902027	5.254641	1	14.088021	-5.049937	5.247944	1	14.020803	-5.130609	5.240879
8	8.492437	-7.689420	-1.478023	8	8.421081	-7.761185	-1.495150	8	8.319084	-7.830714	-1.477321
1	8.232173	-8.225790	-0.728893	1	8.155904	-8.297923	-0.748009	1	8.051196	-8.361606	-0.726978
1	9.235410	-7.177384	-1.158451	1	9.168650	-7.257097	-1.173667	1	9.071248	-7.330939	-1.159848
8	-0.932467	-4.615704	-6.080616	8	-0.971184	-4.530429	-6.120403	8	-0.996657	-4.539737	-6.037759
1	-0.157733	-5.121293	-6.382865	1	-0.204780	-5.050287	-6.420284	1	-0.247157	-5.060550	-6.376443
1	-1.011482	-4.905987	-5.150863	1	-1.057292	-4.818778	-5.190534	1	-1.073331	-4.871743	-5.122319
8	-3.387664	-12.818643	1.234203	8	-3.505298	-12.792266	1.197727	8	-3.641095	-12.754066	1.264320

1	-3.386229	-13.646816	1.713016	1	-3.511418	-13.622174	1.673488	1	-3.652792	-13.581515	1.744243
1	-3.066371	-13.045572	0.361665	1	-3.186017	-13.018891	0.324371	1	-3.325372	-12.987560	0.391480
8	9.044077	-8.956123	2.528425	8	8.960909	-9.047580	2.506631	8	8.856839	-9.101328	2.529776
1	8.362143	-9.023041	1.859849	1	8.278444	-9.105842	1.837787	1	8.172586	-9.157545	1.862585
1	9.240882	-8.020264	2.576962	1	9.166201	-8.113732	2.558619	1	9.069585	-8.168880	2.576680
8	4.322201	4.205349	12.590742	8	4.358016	4.119108	12.617138	8	4.378219	4.151571	12.583295
1	3.632225	4.692151	13.040837	1	3.672457	4.610496	13.068996	1	3.697466	4.650602	13.034043
1	3.878096	3.790925	11.850206	1	3.910219	3.711463	11.875065	1	3.925728	3.743771	11.844161
8	-4.967874	-2.325875	10.454988	8	-4.990827	-2.319585	10.457006	8	-5.025393	-2.223893	10.473948
1	-4.536748	-2.394391	9.602409	1	-4.560281	-2.388875	9.604198	1	-4.597128	-2.300834	9.620648
1	-4.401834	-1.745102	10.963852	1	-4.419573	-1.745852	10.968027	1	-4.448607	-1.652139	10.980957
8	5.118819	-12.108019	-0.706448	8	5.007426	-12.151778	-0.739970	8	4.872481	-12.190422	-0.693405
1	4.991208	-11.942713	0.228274	1	4.881254	-11.988762	0.195348	1	4.749485	-12.021746	0.241333
1	4.464590	-11.559376	-1.138436	1	4.358236	-11.595631	-1.169961	1	4.226825	-11.631326	-1.124890
8	-0.457649	-13.826654	2.201803	8	-0.584627	-13.830396	2.161722	8	-0.726753	-13.810373	2.227720
1	0.074621	-13.804631	1.406653	1	-0.052122	-13.810281	1.366679	1	-0.195711	-13.798429	1.431535
1	-0.499320	-12.914863	2.488358	1	-0.618038	-12.919324	2.451629	1	-0.752401	-12.897630	2.513126
8	-2.137109	4.497055	4.338297	8	-1.938122	4.228617	4.298794	8	-1.547082	4.863839	4.821025
1	-2.392317	4.190632	5.238498	1	-2.275111	4.035135	5.201138	1	-2.023762	4.524592	5.612801
1	-2.804150	4.051514	3.789374	1	-2.618738	3.808798	3.744567	1	-1.965342	4.332918	4.115016
8	0.991060	-14.495355	0.002583	8	0.858108	-14.504126	-0.039888	8	0.706185	-14.506446	0.026662
1	1.810469	-14.905867	0.279860	1	1.673737	-14.923080	0.235907	1	1.519043	-14.930437	0.302936
1	1.210243	-14.052258	-0.817418	1	1.081364	-14.060023	-0.858245	1	0.931280	-14.068209	-0.794349
8	7.120183	8.424651	-4.664253	8	7.195432	8.376297	-4.622104	8	7.214277	8.300119	-4.682636
1	7.576289	8.123081	-3.878428	1	7.648724	8.067709	-3.837377	1	7.666707	7.991887	-3.897271
1	6.837827	7.620662	-5.099963	1	6.905818	7.576514	-5.060781	1	6.917488	7.500464	-5.116727
8	3.439497	-9.367203	7.864061	8	3.352445	-9.427383	7.840503	8	3.256335	-9.410248	7.876573
1	3.436463	-9.620732	6.941089	1	3.347176	-9.677476	6.916605	1	3.247231	-9.664903	6.953952
1	2.699996	-9.840949	8.244925	1	2.608646	-9.895793	8.219593	1	2.509635	-9.870879	8.259476
8	-2.805641	-13.457375	-1.475880	8	-2.928905	-13.426281	-1.514667	8	-3.075191	-13.406143	-1.446000
1	-3.484054	-12.944024	-1.913833	1	-3.602598	-12.905182	-1.950754	1	-3.745637	-12.881931	-1.883357
1	-2.558138	-14.123343	-2.116984	1	-2.687414	-14.092104	-2.158208	1	-2.840250	-14.077056	-2.086674
8	1.554891	9.813356	3.809445	8	1.642372	9.784289	3.856435	8	1.689606	9.794180	3.799718
1	1.577467	10.182212	2.926036	1	1.668359	10.156173	2.974391	1	1.716742	10.161440	2.915772
1	0.788752	9.239564	3.810578	1	0.871054	9.217478	3.855426	1	0.913846	9.233473	3.803075
8	1.525446	14.812146	-2.513146	8	1.658771	14.806372	-2.447718	8	1.732839	14.784438	-2.529531
1	2.412672	14.679722	-2.849443	1	2.544783	14.667136	-2.784465	1	2.617044	14.636539	-2.867330
1	0.986727	14.925826	-3.295775	1	1.121162	14.927819	-3.229943	1	1.194625	14.906214	-3.311289
8	-6.382951	-7.992334	-5.313525	8	-6.456170	-7.914896	-5.332308	8	-6.566631	-7.886241	-5.284211
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8	12.262095	4.265914	-0.915624	8	12.299100	4.157275	-0.888610	8	12.292080	4.059670	-0.938164
1	12.179942	3.960819	-1.818928	1	12.214245	3.856265	-1.793034	1	12.203031	3.754827	-1.840899
1	12.910369	4.968493	-0.957637	1	12.953730	4.854088	-0.928012	1	12.952098	4.751093	-0.982351
8	1.516696	-5.749510	-6.631521	8	1.454947	-5.728639	-6.639721	8	1.391588	-5.777886	-6.645784
1	2.033724	-5.474731	-5.854557	1	1.967988	-5.456836	-5.859815	1	1.923195	-5.508331	-5.877148
1	1.690944	-5.034398	-7.266357	1	1.645324	-5.020081	-7.277400	1	1.573160	-5.071293	-7.288230
8	-8.603693	3.093559	8.443138	8	-8.577143	3.140007	8.464977	8	-8.572606	3.253800	8.461699
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1	-8.359559	2.174672	8.551614	1	-8.341370	2.218549	8.570080	1	-8.343887	2.331047	8.570949
8	-5.957222	-8.131932	-0.513874	8	-6.019469	-8.090632	-0.531716	8	-5.729894	-8.121126	-0.430007
1	-6.073938	-8.221123	0.453054	1	-6.137439	-8.177596	0.435061	1	-6.015253	-8.138561	0.501957
1	-6.365346	-7.269202	-0.689517	1	-6.445133	-7.235690	-0.711811	1	-5.435726	-7.201695	-0.541409
8	-0.793309	6.295533	8.980991	8	-0.738045	6.268927	9.014909	8	-0.708010	6.323504	8.980437
1	-1.665164	6.201183	8.597125	1	-1.610693	6.183911	8.630665	1	-1.582075	6.243455	8.598351
1	-0.953585	6.664629	9.849441	1	-0.895026	6.636264	9.884705	1	-0.860337	6.696406	9.848691
8	-1.510592	11.903347	2.188651	8	-1.403891	11.907980	2.243226	8	-1.343085	11.933749	2.181924
1	-0.923035	12.421319	1.639565	1	-0.811615	12.422613	1.696073	1	-0.747879	12.440957	1.631029
1	-1.059380	11.841429	3.030372	1	-0.953320	11.838870	3.084732	1	-0.891374	11.865291	3.022872
8	-3.579960	11.418914	-3.465838	8	-3.477168	11.463169	-3.413087	8	-3.431213	11.477068	-3.467976
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8	-5.794261	-1.622588	-7.021601	8	-5.809543	-1.544516	-7.016908	8	-5.873247	-1.529650	-7.001974
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8	5.605324	9.767549	0.035517	8	5.557561	9.745306	0.075934	8	5.299404	9.761821	0.378150
1	5.174922	9.656132	-0.817581	1	5.075392	9.713149	-0.756301	1	4.380041	10.034423	0.219036
1	5.458272	8.903815	0.464602	1	5.349017	8.879960	0.477019	1	5.206573	8.805554	0.534507
8	14.250046	6.101545	-1.022314	8	14.303645	5.975159	-0.988468	8	14.310676	5.861166	-1.051092
1	14.597866	5.898747	-1.890868	1	14.649672	5.772409	-1.857749	1	14.653340	5.651356	-1.920031
1	14.975166	5.915441	-0.424761	1	15.027002	5.780282	-0.391575	1	15.033680	5.663573	-0.454665

8	0.355847	2.991313	9.057985		8	0.381055	2.954148	9.079786		8	0.385074	3.000366	9.059701
1	-0.100884	2.461151	9.710574		1	-0.080517	2.425758	9.730401		1	-0.079332	2.478887	9.713867
1	0.511972	3.827880	9.495852		1	0.544739	3.787646	9.520734		1	0.556207	3.834738	9.496144
8	1.905989	-3.443502	3.694827		8	1.789736	-3.412827	3.682795		8	1.773067	-3.239332	3.373436
1	1.422821	-3.623106	4.510090		1	1.313264	-3.573529	4.506337		1	1.008144	-3.801526	3.622408
1	1.254389	-2.919836	3.180793		1	1.140333	-2.888226	3.168510		1	1.332322	-2.446350	3.029948
8	-12.643465	1.617007	-7.014809		8	-12.629048	1.757093	-6.998454		8	-12.666484	1.825692	-6.986562
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8	10.008922	6.092452	-8.050999		8	10.063117	6.030443	-8.017300		8	10.056537	5.914796	-8.071707
1	9.429526	5.634071	-7.442302		1	9.479539	5.575105	-7.410317		1	9.470617	5.467112	-7.461297
1	9.475773	6.226079	-8.833914		1	9.531260	6.171785	-8.799739		1	9.524231	6.056421	-8.853791
8	10.288199	2.424256	-6.585997		8	10.308971	2.354496	-6.565798		8	10.276356	2.244319	-6.602301
1	10.512871	2.029713	-7.429651		1	10.530110	1.961036	-7.410890		1	10.492684	1.844912	-7.445847
1	9.807685	1.739403	-6.121911		1	9.822224	1.672331	-6.104254		1	9.785184	1.568327	-6.136383
8	3.178159	2.955293	-9.057349		8	3.204222	2.959163	-9.035450		8	3.171621	2.892663	-9.060886
1	3.092800	2.119340	-9.514341		1	3.111308	2.125707	-9.495520		1	3.071216	2.057679	-9.516589
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8	-1.934974	-9.068780	-4.712385		8	-2.018193	-9.033892	-4.734965		8	-2.136410	-9.037208	-4.690055
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1	-2.152686	-9.763466	-4.091623		1	-2.242248	-9.728853	-4.116772		1	-2.364684	-9.727284	-4.067946
8	10.424998	2.180103	-0.296664		8	10.443095	2.085968	-0.277400		8	10.421055	2.006143	-0.312914
1	10.798479	2.998944	-0.623660		1	10.824020	2.902582	-0.601366		1	10.807745	2.818100	-0.641720
1	10.271155	2.342700	0.633873		1	10.290669	2.246530	0.653723		1	10.271778	2.172551	0.617693
8	6.426309	3.079278	-7.019722		8	6.453218	3.046150	-6.997257		8	6.425308	2.964197	-7.029587
1	7.195803	3.630797	-6.876669		1	7.227678	3.590129	-6.852146		1	7.204320	3.502770	-6.888736
1	6.656517	2.238720	-6.622804		1	6.675755	2.202081	-6.603427		1	6.641984	2.120377	-6.631976
8	5.638421	-13.039817	-4.476904		8	5.518816	-13.074375	-4.513810		8	5.368970	-13.135854	-4.463581
1	5.395876	-13.965507	-4.459174		1	5.267873	-13.997883	-4.499497		1	5.110789	-14.057272	-4.444145
1	4.816604	-12.573717	-4.324402		1	4.701254	-12.601396	-4.359625		1	4.555471	-12.655679	-4.310149
8	-6.613898	-4.768838	-9.718199		8	-6.657521	-4.673248	-9.725097		8	-6.751309	-4.665080	-9.692775
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8	6.265810	15.002202	-1.338308		8	6.400582	14.949052	-1.272006		8	6.477989	14.895583	-1.363936
1	7.082041	15.495310	-1.257083		1	7.221250	15.434425	-1.188936		1	7.302621	15.374878	-1.284922
1	6.478196	14.128463	-1.010642		1	6.605581	14.072216	-0.947551		1	6.676730	14.018789	-1.035499
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8	0.955314	12.558338	-0.868872		8	1.068080	12.551798	-0.811771		8	1.127710	12.542790	-0.881145
1	1.101986	13.045994	-1.678985		1	1.219231	13.041081	-1.620079		1	1.281078	13.026823	-1.692192
1	0.988708	13.223236	-0.180384		1	1.107460	13.213828	-0.120840		1	1.173697	13.207930	-0.193618
8	-2.632800	11.298984	-7.350301		8	-2.530857	11.348938	-7.297928		8	-2.493675	11.335980	-7.354061
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8	2.789803	-5.181369	-4.092543		8	2.704406	-5.150674	-4.064764		8	2.699999	-5.184476	-4.128395
1	2.183212	-4.994015	-3.334359		1	2.090123	-4.941444	-3.320119		1	2.093639	-4.983600	-3.373598
1	3.611860	-4.766653	-3.791238		1	3.527653	-4.741005	-3.761735		1	3.534204	-4.805009	-3.814101
8	-2.680059	0.621135	-4.438987		8	-2.343715	1.233606	-4.336576		8	-2.745684	1.419764	-4.542517
1	-3.510662	0.101804	-4.426947		1	-3.086869	0.595761	-4.348978		1	-3.580731	0.907630	-4.538519
1	-3.026474	1.531832	-4.298321		1	-2.807013	2.079002	-4.185346		1	-3.052727	2.311171	-4.313462
8	-1.924716	-7.363911	8.447789		8	-1.993398	-7.377625	8.431396		8	-2.071993	-7.315467	8.467770
1	-2.485341	-7.499926	7.683637		1	-2.555180	-7.505732	7.666726		1	-2.636309	-7.442956	7.704865
1	-1.145397	-7.891661	8.269226		1	-1.218890	-7.911770	8.250920		1	-1.302083	-7.856599	8.288440
8	9.356236	10.693764	-3.430614		8	9.451908	10.620457	-3.380037		8	9.490863	10.532586	-3.456293
1	9.709683	11.434736	-2.938789		1	9.812033	11.356375	-2.885474		1	9.857772	11.268101	-2.966136
1	8.441976	10.926996	-3.591613		1	8.539815	10.862573	-3.540210		1	8.580385	10.781086	-3.615872
8	-8.612897	8.106791	-0.428998		8	-8.540189	8.185731	-0.388649		8	-8.513779	8.254805	-0.417146
1	-9.083052	8.545316	0.280959		1	-9.006395	8.625891	0.322899		1	-8.975066	8.702176	0.293110
1	-8.004646	8.769902	-0.757563		1	-7.925919	8.844496	-0.714748		1	-7.894998	8.907069	-0.747755
8	-5.655941	7.607372	1.689961		8	-5.345351	7.487975	1.468256		8	-5.362157	7.957866	1.679920
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1	-5.382570	7.158286	2.520665		1	-5.055771	7.052636	2.300399		1	-4.717742	7.329340	2.064847
8	-5.644463	13.335162	0.687124		8	-5.524483	13.382789	0.746821		8	-5.454943	13.433522	0.686309
1	-6.374119	13.104897	0.112115		1	-6.256159	13.161276	0.170940		1	-6.189502	13.214913	0.112993
1	-5.887303	14.183712	1.056504		1	-5.759635	14.232144	1.119312		1	-5.682646	14.286554	1.055006
8	10.913901	-11.812942	-0.416612		8	10.804926	-11.910403	-0.448829		8	10.672279	-11.993328	-0.414950
1	10.378672	-12.215364	0.266330		1	10.266017	-12.310458	0.232607		1	10.131611	-12.385712	0.269546

1	11.229844	-10.998731	-0.026017	1	11.128222	-11.100538	-0.055228	1	11.002737	-11.184083	-0.026051
8	9.281114	-10.589802	6.117705	8	9.182846	-10.696541	6.089883	8	9.073012	-10.734077	6.120797
1	8.645535	-9.907104	5.901142	1	8.553508	-10.007308	5.875810	1	8.448692	-10.040978	5.904519
1	9.972937	-10.130180	6.592349	1	9.878779	-10.244970	6.566241	1	9.773441	-10.285636	6.593509
8	10.906940	-5.878208	5.928000	8	10.851400	-5.999239	5.917582	8	10.778164	-6.050999	5.921668
1	10.491177	-5.757936	5.074072	1	10.436808	-5.872054	5.064087	1	10.362864	-5.924812	5.068369
1	11.232023	-5.008416	6.160539	1	11.184352	-5.133296	6.153332	1	11.118401	-5.186543	6.152418
8	4.337758	-2.260229	4.415366	8	4.284122	-2.316963	4.419458	8	4.155200	-2.270627	4.461423
1	3.581857	-2.795617	4.113902	1	3.517996	-2.837568	4.120379	1	3.364515	-2.732971	4.124966
1	4.784004	-2.862378	5.037138	1	4.722643	-2.926717	5.038377	1	4.539256	-2.927224	5.065110
8	-7.876285	-12.302443	-4.296675	8	-7.988651	-12.214980	-4.331386	8	-8.130913	-12.169053	-4.258731
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1	-7.362572	-12.253987	-3.490473	1	-7.474578	-12.174158	-3.524991	1	-7.614908	-12.128261	-3.453570
8	10.657809	1.328251	-9.148310	8	10.668796	1.264616	-9.132113	8	10.622404	1.138834	-9.163831
1	10.712617	0.557875	-9.713465	1	10.716646	0.495859	-9.700097	1	10.663052	0.366898	-9.728051
1	9.972707	1.867477	-9.545082	1	9.988647	1.811496	-9.526923	1	9.945790	1.689083	-9.560030
8	2.211013	-0.019086	7.173955	8	2.207007	-0.119013	7.171281	8	1.866441	-0.246358	7.246335
1	2.206230	0.953025	7.212929	1	2.227471	0.852661	7.226896	1	1.929665	0.727217	7.279650
1	1.282859	-0.216070	6.927137	1	1.272664	-0.287917	6.927940	1	0.975888	-0.377537	6.869294
8	5.148978	-0.103109	-12.187837	8	5.147412	-0.105468	-12.177098	8	5.084265	-0.202848	-12.190982
1	4.806029	0.748725	-11.920217	1	4.812194	0.748455	-11.906358	1	4.756331	0.655034	-11.923860
1	5.180075	-0.613974	-11.379728	1	5.173811	-0.619564	-11.370874	1	5.108241	-0.713104	-11.382247
8	2.610167	11.722988	-5.393217	8	2.715603	11.718111	-5.339096	8	2.759473	11.673540	-5.407491
1	2.297805	12.575497	-5.697242	1	2.411017	12.574535	-5.639994	1	2.461035	12.530825	-5.712071
1	1.861957	11.137692	-5.512563	1	1.962119	11.140077	-5.460625	1	2.001215	11.100866	-5.524631
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8	-14.174237	-0.811420	1.117152	8	-14.182390	-0.687242	1.124455	8	-14.222632	-0.565726	1.151547
1	-14.360427	-1.354404	1.882734	1	-14.373558	-1.231327	1.888027	1	-14.416538	-1.104467	1.918212
1	-14.977450	-0.844213	0.598403	1	-14.985831	-0.710832	0.605558	1	-15.027279	-0.585569	0.634366
8	2.478610	8.020230	-0.000171	8	2.056878	8.030488	0.973430	8	1.965731	8.174339	1.062373
1	3.255661	7.900443	0.572043	1	3.001358	7.836783	1.090452	1	2.853053	7.788334	1.167568
1	2.176297	8.911561	0.240967	1	2.049988	9.002459	0.909610	1	2.168454	9.063789	0.720419
8	7.886219	4.126249	0.095909	8	7.937350	4.002471	0.149219	8	7.886419	3.901793	0.109572
1	7.745569	3.165593	0.113781	1	7.780118	3.044114	0.165256	1	7.741323	2.941606	0.129075
1	8.101217	4.317667	1.026708	1	8.117742	4.193041	1.088840	1	8.071438	4.097431	1.046711
8	-12.308876	-2.950563	-1.202479	8	-12.336364	-2.834686	-1.202962	8	-12.398280	-2.739257	-1.168733
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8	0.267825	-14.858878	4.702403	8	0.131265	-14.878360	4.658533	8	-0.014099	-14.851471	4.728328
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1	0.127234	-14.498332	3.826589	1	-0.005984	-14.513332	3.784048	1	-0.150232	-14.489742	3.852298
8	-1.052258	-5.026918	11.969895	8	-1.100008	-5.061628	11.962112	8	-1.153263	-4.988988	11.985067
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1	9.077004	3.901302	3.392366	1	9.035819	3.835510	3.438846	1	9.051660	3.788679	3.383091
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1	-10.889098	-1.458417	-3.467270	1	-11.436782	-0.742308	-3.095751	1	-11.449386	-0.731592	-3.126677
1	-9.639155	-2.276467	-3.225738	1	-10.339570	-1.749703	-3.391560	1	-10.460341	-1.815314	-3.515829
8	3.689526	13.119096	1.356879	8	3.807111	13.079512	1.416133	8	3.875304	13.060002	1.338662
1	4.051423	12.656568	2.113187	1	4.164739	12.610937	2.170748	1	4.230752	12.592394	2.094906
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8	5.977083	10.712106	-6.616753	8	6.073289	10.681207	-6.566215	8	6.106403	10.604072	-6.636043
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1	-6.081898	-11.514132	-0.959899	1	-6.187420	-11.455280	-0.991663	1	-6.317016	-11.406916	-0.926427
8	-0.046711	-1.544067	-10.062516	8	-0.061299	-1.506998	-10.057293	8	-0.131034	-1.552651	-10.053880
1	0.451021	-1.276768	-9.290213	1	0.438785	-1.247073	-9.283993	1	0.372641	-1.292820	-9.282883
1	-0.459115	-2.368980	-9.808519	1	-0.481195	-2.329062	-9.806350	1	-0.556885	-2.370114	-9.797991
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1	11.884318	9.335609	4.883128	1	11.966958	9.208819	4.928747	1	12.011481	9.142660	4.854464
1	10.432542	9.703263	4.661934	1	10.518596	9.590451	4.708852	1	10.565730	9.534602	4.635526
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8	10.892848	-3.925763	-8.169580	8	10.856047	-3.994881	-8.172718	8	10.770158	-4.117120	-8.178476
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1	10.582273	-4.503293	-8.866816	1	10.540291	-4.566998	-8.872087	1	10.448494	-4.690214	-8.874344
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1	4.422629	6.416921	0.850311	1	4.294546	6.439280	0.817523	1	4.156143	6.336479	0.681206
1	5.573339	6.975679	1.663397	1	5.439682	6.955886	1.664498	1	5.250379	6.790506	1.625848
8	4.688687	-5.968798	-0.564435	8	4.561608	-5.920340	-0.576714	8	4.647245	-6.058203	-0.607336
1	3.727359	-5.757390	-0.423937	1	3.608591	-5.672597	-0.437197	1	3.694730	-5.799129	-0.498000
1	4.650805	-6.563362	-1.316452	1	4.495928	-6.554214	-1.293769	1	4.600877	-6.679711	-1.336802
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1	-10.143663	0.660355	-2.381838	1	-9.574312	0.526838	-3.115090	1	-9.283519	0.020501	-2.345496
8	-3.422606	13.087996	-0.921345	8	-3.304847	13.121378	-0.862462	8	-3.240688	13.146581	-0.926035
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8	-9.765434	2.918804	-8.840214	8	-9.739184	3.039411	-8.818947	8	-9.770289	3.076072	-8.819170
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1	2.664533	5.682967	-2.995048	1	2.858676	5.537213	-3.146934	1	2.788462	5.500804	-3.421713
1	1.393655	5.408466	-3.777311	1	1.516409	5.454672	-3.848120	1	1.376894	5.456738	-3.975094
8	-7.210914	7.937738	-8.878868	8	-7.139194	8.035050	-8.839031	8	-7.131074	8.050888	-8.869423
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1	-6.556299	8.440686	-8.394045	1	-6.480074	8.530245	-8.352335	1	-6.467093	8.543293	-8.386519
8	1.394738	-6.333797	9.404807	8	1.335204	-6.381225	9.392325	8	1.266287	-6.340565	9.417107
1	0.842661	-6.803974	10.030549	1	0.778836	-6.848669	10.016311	1	0.707515	-6.800485	10.044526
1	1.447856	-5.444065	9.754272	1	1.396374	-5.493304	9.745065	1	1.335161	-5.451403	9.765273
8	-9.680471	0.613758	9.580809	8	-9.676475	0.665917	9.593472	8	-9.689112	0.794123	9.604745
1	-9.607301	0.670154	10.533492	1	-9.602864	0.718140	10.546359	1	-9.613168	0.850522	10.557212
1	-10.606075	0.783765	9.401158	1	-10.600484	0.844981	9.414413	1	-10.612041	0.979573	9.426621
8	0.256146	-5.141077	6.886323	8	0.207670	-5.168956	6.878205	8	0.143264	-5.132010	6.899183
1	0.566310	-5.390490	7.756764	1	0.515494	-5.424376	7.747733	1	0.450821	-5.385504	7.769369
1	0.739478	-5.711278	6.287291	1	0.685848	-5.741313	6.277095	1	0.615705	-5.711115	6.300003
8	-0.987156	11.175709	-9.658519	8	-0.886235	11.219220	-9.606521	8	-0.854789	11.181769	-9.665226
1	-0.312954	10.510201	-9.518361	1	-0.218115	10.547106	-9.468788	1	-0.191707	10.505103	-9.525451
1	-1.761748	10.679607	-9.923543	1	-1.665282	10.731150	-9.873399	1	-1.638194	10.698533	-9.928113
8	3.612329	2.872391	-4.132681	8	3.734747	2.816611	-4.144260	8	3.635852	2.753702	-4.199061
1	3.795278	3.326552	-4.983469	1	3.905349	3.280274	-4.994490	1	3.855723	3.201387	-5.047204
1	3.009476	3.518770	-3.703956	1	3.076531	3.421496	-3.737192	1	2.972505	3.378520	-3.832852
8	-0.212309	-10.854487	-7.477801	8	-0.311616	-10.824979	-7.506869	8	-0.449593	-10.855517	-7.456325
1	-0.604043	-10.095869	-7.910737	1	-0.696414	-10.061247	-7.937025	1	-0.829230	-10.090931	-7.889538
1	-0.406335	-10.726974	-6.549621	1	-0.504542	-10.699126	-6.578233	1	-0.639647	-10.723512	-6.527950
8	-0.535569	11.349227	-5.239230	8	-0.433407	11.372367	-5.186607	8	-0.391849	11.353408	-5.247039
1	-1.333484	10.887390	-5.498781	1	-1.235465	10.918752	-5.447886	1	-1.197981	10.904834	-5.504455
1	-0.571510	11.370517	-4.283574	1	-0.469223	11.390465	-4.230879	1	-0.425592	11.376560	-4.291345
8	-8.059239	9.307661	2.674387	8	-7.975872	9.370096	2.719155	8	-7.933879	9.450186	2.683565
1	-8.238325	9.655268	3.548255	1	-8.151858	9.716096	3.594291	1	-8.105366	9.801929	3.557303
1	-7.130556	9.489850	2.531393	1	-7.045564	9.544369	2.576869	1	-7.002515	9.616403	2.538566
8	-0.436154	1.395656	13.032054	8	-0.425686	1.351134	13.047925	8	-0.426258	1.423599	13.037408
1	0.252812	1.338932	12.369986	1	0.262784	1.290594	12.385679	1	0.260374	1.354324	12.374113
1	-0.159208	2.109785	13.605273	1	-0.142309	2.060605	13.623778	1	-0.136140	2.133679	13.609138
8	-0.936189	-7.803559	3.691788	8	-1.002990	-7.821034	3.679697	8	-0.894490	-7.584141	3.775712
1	-1.608846	-8.080885	3.033809	1	-1.674638	-8.094539	3.018963	1	-1.503250	-7.995379	3.127026
1	-1.385841	-7.970238	4.528112	1	-1.461320	-7.973926	4.513988	1	-1.386136	-7.668745	4.601611
8	5.403151	-10.876643	1.965459	8	5.302736	-10.932875	1.936462	8	5.182785	-10.960537	1.976298
1	4.782610	-11.073323	2.667860	1	4.680384	-11.126495	2.638110	1	4.560345	-11.145736	2.680138
1	6.233342	-10.720266	2.415972	1	6.134280	-10.785702	2.387578	1	6.016372	-10.817675	2.425026
8	-15.979134	-2.630499	-2.411954	8	-16.003478	-2.476858	-2.411391	8	-16.064892	-2.358557	-2.371679
1	-15.747772	-3.337316	-1.808983	1	-15.778586	-3.187961	-1.811017	1	-15.844398	-3.068404	-1.768197
1	-16.293430	-1.925705	-1.846136	1	-16.311401	-1.771326	-1.842994	1	-16.366101	-1.647788	-1.806216
8	-3.498682	9.318443	8.774427	8	-3.415843	9.317019	8.819368	8	-3.362105	9.391605	8.774930
1	-3.335254	9.695609	7.910034	1	-3.248934	9.695863	7.956376	1	-3.193960	9.764808	7.909722
1	-4.415908	9.044213	8.746298	1	-4.335519	9.051232	8.790195	1	-4.283903	9.132938	8.748909
8	-13.078434	1.337535	-0.088020	8	-13.067033	1.456094	-0.072758	8	-13.092845	1.562741	-0.058592
1	-13.038536	0.527832	0.421130	1	-13.034525	0.644194	0.433411	1	-13.065712	0.753148	0.451571
1	-12.169364	1.631472	-0.141251	1	-12.155327	1.741957	-0.124871	1	-12.179023	1.841142	-0.113941

8	1.511432	-12.203768	4.996978	8	1.398909	-12.235754	4.962926	8	1.274933	-12.217458	5.016971
1	0.854940	-11.667866	4.551818	1	0.747342	-11.692278	4.519717	1	0.626774	-11.671079	4.572335
1	1.101692	-13.064062	5.080827	1	0.981368	-13.092594	5.043593	1	0.850820	-13.070565	5.102755
8	8.203512	-8.051468	7.578330	8	8.128233	-8.153919	7.559799	8	8.041428	-8.175908	7.580043
1	7.754668	-7.433259	8.155666	1	7.684979	-7.533788	8.139389	1	7.604244	-7.549415	8.157396
1	7.992042	-7.750009	6.694034	1	7.919571	-7.847300	6.676610	1	7.833406	-7.872066	6.695743
8	13.177851	4.132872	2.239651	8	13.213385	4.004313	2.266190	8	13.211498	3.915257	2.215548
1	12.885452	3.782117	1.398713	1	12.917874	3.659325	1.423955	1	12.911578	3.568409	1.375637
1	12.413778	4.594791	2.584657	1	12.453513	4.471878	2.612864	1	12.456033	4.390525	2.561379
8	-11.625389	-1.750718	2.071419	8	-11.607496	-1.624213	2.041405	8	-11.814469	-1.711374	2.087287
1	-12.460479	-1.525272	1.632503	1	-12.458503	-1.434324	1.616257	1	-12.573715	-1.383611	1.579412
1	-10.984692	-1.685129	1.333656	1	-10.989014	-1.580232	1.284176	1	-11.247830	-2.096160	1.409792
8	-9.635584	-10.162534	-3.700286	8	-9.728490	-10.061393	-3.727192	8	-9.852511	-9.998821	-3.661891
1	-9.196973	-9.347922	-3.454515	1	-9.282517	-9.251707	-3.478408	1	-9.399673	-9.191446	-3.418048
1	-10.402465	-9.880061	-4.198124	1	-10.492739	-9.770138	-4.224017	1	-10.615444	-9.704032	-4.158654
8	1.162479	-12.267052	7.986999	8	1.049181	-12.306869	7.952681	8	0.930692	-12.270883	8.007731
1	1.579057	-13.126510	7.921820	1	1.457943	-13.169829	7.884355	1	1.332504	-13.137371	7.942920
1	1.845627	-11.649835	7.724055	1	1.737925	-11.694918	7.692037	1	1.623707	-11.665692	7.742663
8	-3.503587	-1.082950	-9.010629	8	-3.513920	-1.018384	-9.003849	8	-3.577566	-1.031567	-8.996065
1	-2.700576	-1.081507	-8.490136	1	-2.710966	-1.026149	-8.483323	1	-2.773649	-1.043066	-8.477097
1	-3.225832	-0.797704	-9.880512	1	-3.233524	-0.732473	-9.872666	1	-3.296681	-0.752219	-9.866856
8	-3.537237	3.084635	-4.140598	8	-3.483479	3.676002	-3.999453	8	-3.512174	4.093865	-3.883282
1	-3.757901	3.722706	-3.440910	1	-4.243987	3.781167	-3.390525	1	-4.187076	3.817797	-3.231049
1	-3.939132	3.478906	-4.928434	1	-3.890351	3.825414	-4.866880	1	-4.018127	4.152072	-4.703425
8	3.346001	7.059645	10.483544	8	3.407926	6.989887	10.520422	8	3.446541	7.019250	10.474112
1	4.292413	7.028138	10.623266	1	4.354002	6.949273	10.660063	1	4.392548	6.971873	10.612082
1	3.211886	6.607206	9.651311	1	3.269767	6.541749	9.686525	1	3.303173	6.568058	9.642744
8	2.063248	10.743845	0.920551	8	2.094873	10.817620	1.091235	8	2.695796	10.754939	0.414860
1	1.529494	11.137917	0.203160	1	1.597168	11.186064	0.335207	1	2.067771	11.146863	-0.226819
1	2.711406	11.448277	1.091890	1	2.765963	11.508495	1.236984	1	3.111792	11.559592	0.784850
8	10.829433	-4.219061	-2.705338	8	10.792488	-4.304592	-2.707909	8	10.712173	-4.407551	-2.720529
1	11.676691	-3.778218	-2.859694	1	11.645587	-3.875406	-2.863989	1	11.564793	-3.975985	-2.870469
1	10.301475	-3.538888	-2.264713	1	10.275194	-3.617430	-2.265884	1	10.197022	-3.729434	-2.261101
8	-1.331499	-11.181871	3.751219	8	-1.434537	-11.183506	3.720828	8	-1.552637	-11.149110	3.775228
1	-2.074528	-10.634709	4.007791	1	-2.172585	-10.630568	3.979383	1	-2.285784	-10.589084	4.032471
1	-1.214741	-11.005578	2.817912	1	-1.316115	-11.004847	2.788180	1	-1.434695	-10.976051	2.841465
8	-9.171908	-6.524144	-10.567995	8	-9.231303	-6.402116	-10.581446	8	-9.340352	-6.377849	-10.535357
1	-8.887880	-6.108127	-9.754363	1	-8.943567	-5.991692	-9.766277	1	-9.047747	-5.965642	-9.722826
1	-8.505266	-7.188662	-10.742406	1	-8.570710	-7.072012	-10.758276	1	-8.685414	-7.053809	-10.710137
8	7.112649	-10.100248	-5.575392	8	7.019752	-10.144290	-5.601416	8	6.890740	-10.223166	-5.568818
1	7.579653	-9.681801	-6.298182	1	7.490588	-9.727445	-6.322642	1	7.363389	-9.813654	-6.293054
1	7.799132	-10.522880	-5.058961	1	7.702333	-10.575036	-5.086518	1	7.570946	-10.656705	-5.053121
8	5.858957	-3.825359	6.049399	8	5.822257	-3.901097	6.046342	8	5.765974	-3.912641	6.049870
1	5.375028	-4.618800	5.824027	1	5.331159	-4.689276	5.818033	1	5.268223	-4.698053	5.826484
1	6.007241	-3.894454	6.992906	1	5.969841	-3.975007	6.989594	1	5.914875	-3.983002	6.993186
8	-15.446866	2.059475	-1.162067	8	-15.428735	2.203458	-1.144231	8	-15.450745	2.323350	-1.129119
1	-15.290160	2.977501	-0.943324	1	-15.263716	3.119212	-0.922104	1	-15.278069	3.238872	-0.911909
1	-14.659341	1.604142	-0.862829	1	-14.645398	1.739895	-0.846641	1	-14.670485	1.855115	-0.830761
8	-11.394761	-10.560447	-0.579424	8	-11.491431	-10.454797	-0.607883	8	-11.612197	-10.362729	-0.537167
1	-10.911445	-9.882016	-0.108464	1	-11.002008	-9.782521	-0.134411	1	-11.116538	-9.691978	-0.068038
1	-10.719716	-11.058670	-1.039898	1	-10.820905	-10.957431	-1.070162	1	-10.946586	-10.872938	-0.998249
8	-3.041719	3.519865	6.650247	8	-3.011399	3.522386	6.673880	8	-3.007649	3.583322	6.657697
1	-2.450992	2.920324	7.106548	1	-2.426172	2.915830	7.127993	1	-2.426303	2.974444	7.113684
1	-3.915990	3.169871	6.820818	1	-3.888824	3.179719	6.843127	1	-3.887402	3.248436	6.830395
8	-4.986520	5.926720	3.667923	8	-4.647238	5.905885	3.509247	8	-3.914355	5.899328	2.712326
1	-4.824156	4.970288	3.683692	1	-4.508059	4.947114	3.489061	1	-3.724151	4.977622	2.947764
1	-4.218596	6.287487	4.134234	1	-3.797315	6.241387	3.841625	1	-3.441333	6.398018	3.399000
8	12.233245	-0.163917	-0.892049	8	12.230026	-0.272168	-0.881339	8	12.188132	-0.368999	-0.908569
1	11.536480	0.472239	-0.729821	1	11.539055	0.369688	-0.716797	1	11.502572	0.279100	-0.745877
1	12.023341	-0.537432	-1.748368	1	12.016800	-0.640608	-1.739035	1	11.970280	-0.740024	-1.763986
8	-6.084477	-12.335005	5.826493	8	-6.197938	-12.301063	5.791663	8	-6.320505	-12.218710	5.861057
1	-6.701207	-11.955531	5.201133	1	-6.811153	-11.913706	5.167680	1	-6.931907	-11.829649	5.236357
1	-5.355418	-12.641572	5.289005	1	-5.471654	-12.612257	5.253078	1	-5.597782	-12.538308	5.322602
8	-9.930447	2.585353	-5.614349	8	-9.907449	2.695603	-5.594337	8	-9.934747	2.749707	-5.592552
1	-9.861570	2.499177	-6.565731	1	-9.839291	2.612308	-6.546027	1	-9.869168	2.661127	-6.543947
1	-10.863551	2.480625	-5.431426	1	-10.841480	2.598680	-5.411836	1	-10.869142	2.661067	-5.407720
8	6.542136	5.991477	-1.599868	8	6.767758	5.866796	-1.583394	8	6.773604	5.799199	-1.653460
1	7.018691	6.840795	-1.599177	1	7.222205	6.727561	-1.536480	1	7.221971	6.662588	-1.597776
1	7.040430	5.469992	-0.947529	1	7.242499	5.342055	-0.914010	1	7.227450	5.281487	-0.965321
8	8.841925	-4.259804	1.407784	8	8.793907	-4.348280	1.404970	8	8.742222	-4.390995	1.423636
1	8.381439	-3.965756	2.216780	1	8.333964	-4.052553	2.213764	1	8.277951	-4.080457	2.224795

1	9.512757	-4.862314	1.763513	1	9.453212	-4.963780	1.759910	1	9.394053	-5.006373	1.793252
8	-7.420001	-5.793699	-1.490783	8	-7.365018	-5.763143	-1.511491	8	-6.985862	-5.246296	-2.906283
1	-6.543852	-5.359565	-1.517160	1	-6.457952	-5.403063	-1.614753	1	-6.178112	-5.367309	-2.369876
1	-7.991585	-5.090014	-1.147320	1	-7.842492	-4.988567	-1.153461	1	-7.588467	-4.817173	-2.271794
8	9.827008	-9.527168	-3.773954	8	9.739074	-9.602515	-3.797777	8	9.617881	-9.693855	-3.773301
1	10.031198	-10.422758	-3.504721	1	9.935104	-10.500907	-3.531835	1	9.807365	-10.592427	-3.503250
1	9.401790	-9.138618	-3.009856	1	9.317348	-9.212935	-3.032271	1	9.200783	-9.297143	-3.008922
8	-2.732031	7.221606	4.681739	8	-2.218794	6.982223	4.188543	8	-2.363907	7.465828	4.366736
1	-2.346565	6.328258	4.699995	1	-1.867027	6.083684	4.298088	1	-1.918189	6.665380	4.694292
1	-2.053551	7.726862	4.201104	1	-1.538171	7.406890	3.635938	1	-1.719316	7.817373	3.729901

CHEMICAL REACTION: Nucleophilic attack of water on the phosphodiester P–O bond

TOTAL GIBBS FREE ENERGY (a.u.)

REACTIVE COMPLEX	TRANSITION STATE	PRODUCT COMPLEX
−2207.111369	−2207.038511	−2207.112803
	NImag = 1, −947 cm⁻¹	

GEOMETRIES

REACTIVE COMPLEX				TRANSITION STATE				PRODUCT COMPLEX			
15	1.750585	0.516144	-0.541966	15	1.961910	0.457183	-0.390208	15	2.568312	0.435584	-0.140134
15	-1.048010	1.158265	0.035745	15	-0.895753	1.157976	0.053947	15	-1.506577	1.279103	0.053609
8	1.382336	-0.972872	-0.074997	8	1.423445	-0.968593	0.088229	8	1.715285	-0.875946	0.209163
8	-1.778852	-0.218535	-0.369267	8	-1.699180	-0.196291	-0.323836	8	-1.922334	-0.191030	-0.477133
8	0.254327	1.048972	-0.945225	8	0.406687	0.966738	-0.863851	8	-0.301295	1.664119	-0.936983
8	2.327853	1.335479	0.578847	8	2.170664	1.636205	0.653820	8	1.864657	1.617046	0.490411
8	-0.625539	1.146641	1.491736	8	-0.561308	1.172909	1.540895	8	-0.980748	1.209646	1.482612
8	2.548829	0.475276	-1.833204	8	2.646520	0.478640	-1.753483	8	2.773375	0.487111	-1.650045
8	-1.869332	2.337636	-0.403667	8	-1.681038	2.356224	-0.422884	8	-2.644703	2.238457	-0.199865
6	2.414388	-1.727084	0.606660	6	2.271222	-2.068420	0.478099	6	2.400444	-2.087812	0.559130
6	-3.193754	-0.310160	-0.096965	6	-3.101802	-0.220706	-0.001547	6	-3.310014	-0.561371	-0.331296
1	2.601351	-1.282162	1.585600	1	2.560479	-1.938484	1.516670	1	2.645592	-2.038859	1.617364
1	2.030685	-2.739881	0.713672	1	1.662970	-2.958595	0.344210	1	1.717235	-2.908166	0.360372
1	-3.731358	0.372913	-0.756922	1	-3.634811	0.482164	-0.645778	1	-3.915408	0.039906	-1.010964
1	-3.395446	-0.072294	0.952170	1	-3.257634	0.032834	1.052621	1	-3.638720	-0.412935	0.700996
1	3.332587	-1.741002	0.015805	1	3.159218	-2.120861	-0.147344	1	3.309735	-2.222793	-0.028981
1	-3.478929	-1.342578	-0.294452	1	-3.445566	-1.239030	-0.180518	1	-3.379840	-1.619760	-0.580400
8	6.968823	2.797214	-1.252874	8	6.978532	2.785119	-1.243609	8	6.952529	2.888581	-1.252550
1	7.402145	2.100746	-1.746100	1	7.411724	2.087815	-1.735768	1	7.397064	2.196860	-1.742467
1	6.033845	2.624713	-1.365055	1	6.043505	2.614079	-1.357608	1	6.020413	2.702349	-1.366575
8	6.436997	-3.476180	-1.199824	8	6.436571	-3.487402	-1.189814	8	6.510475	-3.391595	-1.181067
1	5.969018	-2.643472	-1.252308	1	5.970030	-2.653962	-1.243473	1	6.030755	-2.565846	-1.237375
1	6.493778	-3.660846	-0.262356	1	6.491183	-3.671885	-0.252182	1	6.567456	-3.572504	-0.242880
8	-3.436289	2.814536	-7.000488	8	-3.415037	2.817397	-7.012005	8	-3.436778	2.738864	-7.026769
1	-3.539571	2.397407	-7.855213	1	-3.517279	2.400184	-7.866814	1	-3.531851	2.317634	-7.880435
1	-2.707898	3.424756	-7.117965	1	-2.685439	3.426417	-7.128202	1	-2.716899	3.359091	-7.144308
8	1.601793	-1.920033	8.376040	8	1.584743	-1.920739	8.375922	8	1.628585	-1.875050	8.377449
1	1.693380	-2.362960	7.533548	1	1.677306	-2.364058	7.533741	1	1.728700	-2.319245	7.536594
1	1.017092	-2.485121	8.881042	1	0.998133	-2.484745	8.879916	1	1.050727	-2.446883	8.882733
8	1.045943	-4.873211	7.620683	8	1.025683	-4.873246	7.620306	8	1.117058	-4.838234	7.629993
1	0.122988	-4.642314	7.512267	1	0.103317	-4.640905	7.509980	1	0.191177	-4.620925	7.518491
1	1.500038	-4.367620	6.946652	1	1.481931	-4.368577	6.947038	1	1.565617	-4.328290	6.955533
8	-1.338477	-3.803050	5.466852	8	-1.352717	-3.799902	5.461407	8	-1.276835	-3.809073	5.466708
1	-1.757990	-3.403490	4.704563	1	-1.770066	-3.399894	4.698167	1	-1.700043	-3.417945	4.702093
1	-1.693791	-4.691575	5.497268	1	-1.709512	-4.687849	5.491369	1	-1.619465	-4.702500	5.499019
8	-8.314207	-6.607090	-2.841670	8	-8.316311	-6.595208	-2.860227	8	-8.190051	-6.738687	-2.850730
1	-7.761040	-5.914844	-3.202667	1	-7.761318	-5.903954	-3.220318	1	-7.645919	-6.039714	-3.212494
1	-9.207204	-6.337605	-3.059166	1	-9.208440	-6.324361	-3.079585	1	-9.086248	-6.482708	-3.071358
8	-0.072319	6.317266	6.760625	8	-0.072965	6.318755	6.754792	8	-0.159128	6.332334	6.731778
1	0.164434	5.790884	5.997822	1	0.164469	5.791772	5.992615	1	0.087123	5.807023	5.971247
1	-1.027238	6.374395	6.725448	1	-1.027720	6.377399	6.717691	1	-1.114674	6.375662	6.693981
8	2.423256	4.046914	0.586960	8	2.515895	4.272905	0.513867	8	2.394322	4.207218	0.601899
1	3.260134	4.498893	0.785460	1	3.350265	4.751211	0.662274	1	3.217734	4.657670	0.854155
1	2.646760	3.097316	0.472746	1	2.768846	3.362154	0.273087	1	2.617932	3.261827	0.476571
8	-1.008506	-2.375018	-2.000888	8	-1.005546	-2.374574	-2.006070	8	-0.947926	-2.399750	-2.004632
1	-1.420871	-1.621476	-1.578178	1	-1.417550	-1.620251	-1.584401	1	-1.372141	-1.650881	-1.585357
1	-0.078850	-2.149150	-2.039139	1	-0.075456	-2.150204	-2.042528	1	-0.021505	-2.160704	-2.041219
8	7.515180	5.179609	3.590409	8	7.519022	5.168049	3.600069	8	7.452107	5.293652	3.584572
1	7.140295	4.304183	3.689143	1	7.142541	4.293251	3.698306	1	7.089543	4.413255	3.685110
1	7.094478	5.698171	4.276795	1	7.097779	5.687482	4.285464	1	7.022237	5.808269	4.268242
8	-3.898193	1.898163	-2.856330	8	-3.886683	1.902971	-2.868515	8	-3.896287	1.828893	-2.880937
1	-4.055173	2.718000	-2.388423	1	-4.043286	2.723193	-2.401158	1	-4.066210	2.647850	-2.416020
1	-2.946436	1.846884	-2.939021	1	-2.934847	1.850147	-2.949289	1	-2.943683	1.791000	-2.961031
8	-5.016479	3.335170	4.899260	8	-5.018160	3.344022	4.884411	8	-5.055211	3.273900	4.867197
1	-4.784772	2.453426	5.191829	1	-4.788447	2.461994	5.177697	1	-4.811661	2.396483	5.163139
1	-5.871816	3.501793	5.296862	1	-5.874021	3.512127	5.280256	1	-5.913877	3.429486	5.262085
8	-1.068498	6.472913	1.108019	8	-1.057602	6.474346	1.100163	8	-1.142728	6.456062	1.076182

1	-1.325212	6.665708	2.009467	1	-1.315807	6.667814	2.001040	1	-1.404521	6.647968	1.976358
1	-0.840886	5.543712	1.116586	1	-0.831493	5.544786	1.109451	1	-0.901854	5.530250	1.088261
8	2.607530	5.968429	-2.978746	8	2.625771	5.962797	-2.979105	8	2.550767	5.991571	-2.999562
1	3.296745	6.381810	-2.458419	1	3.314605	6.375229	-2.457522	1	3.232635	6.416408	-2.478782
1	1.974536	5.654516	-2.333171	1	1.990987	5.650085	-2.334705	1	1.920657	5.670635	-2.354620
8	-0.664285	-0.265021	-8.235609	8	-0.645500	-0.266946	-8.240698	8	-0.617746	-0.304487	-8.245078
1	-0.091466	-0.082190	-7.490306	1	-0.073879	-0.084814	-7.494304	1	-0.049546	-0.111143	-7.498894
1	-0.233947	-0.985965	-8.695473	1	-0.215398	-0.988711	-8.699494	1	-0.175932	-1.020620	-8.701565
8	3.271198	-8.661696	0.346602	8	3.259402	-8.667400	0.351778	8	3.415260	-8.617100	0.373614
1	3.622318	-9.525943	0.135409	1	3.609561	-9.532269	0.141536	1	3.779270	-9.476880	0.166047
1	2.510071	-8.565244	-0.226591	1	2.499577	-8.569899	-0.222964	1	2.654324	-8.533353	-0.201827
8	1.610883	7.723441	1.374694	8	1.623238	7.720668	1.371830	8	1.517765	7.745686	1.345758
1	0.874511	7.181209	1.656889	1	0.885437	7.179695	1.652709	1	0.788503	7.193838	1.627779
1	1.208120	8.540869	1.080994	1	1.222370	8.538654	1.077090	1	1.104101	8.556339	1.048452
8	-2.215101	4.533474	-1.816976	8	-2.209758	4.523863	-1.824593	8	-2.223716	4.370857	-1.780181
1	-1.983733	3.722723	-1.312211	1	-1.943797	3.715449	-1.330728	1	-2.140833	3.576621	-1.203561
1	-3.192678	4.495142	-1.824410	1	-3.187048	4.468788	-1.814174	1	-3.198661	4.416676	-1.849369
8	-1.416679	-6.888632	3.762312	8	-1.432447	-6.885852	3.757604	8	-1.306400	-6.900760	3.771718
1	-1.663048	-6.251483	3.091747	1	-1.676457	-6.248504	3.086365	1	-1.560124	-6.269299	3.098519
1	-1.866475	-7.693838	3.503515	1	-1.883012	-7.690412	3.498141	1	-1.743943	-7.713130	3.514314
8	3.062638	-2.265663	-5.459005	8	3.072666	-2.272734	-5.456077	8	3.130213	-2.242846	-5.452659
1	2.958269	-2.061904	-4.529980	1	2.966767	-2.068537	-4.527321	1	3.020521	-2.037707	-4.524550
1	3.505699	-3.114318	-5.470088	1	3.514391	-3.122099	-5.466030	1	3.585413	-3.085094	-5.459932
8	-1.097562	-2.931742	8.041078	8	-1.115551	-2.928230	8.035859	8	-1.055121	-2.926379	8.038781
1	-1.409914	-3.203846	7.177652	1	-1.426612	-3.200086	7.171889	1	-1.361296	-3.205623	7.175422
1	-1.023211	-1.978870	7.979592	1	-1.039554	-1.975496	7.974247	1	-0.994265	-1.972736	7.974478
8	-0.007995	3.968783	1.876395	8	0.076692	3.999483	1.856530	8	-0.087433	3.941360	1.858159
1	-0.283906	3.034225	1.803570	1	-0.191692	3.063727	1.762457	1	-0.393112	3.012077	1.798415
1	0.910427	3.998032	1.525065	1	0.990299	4.049505	1.500231	1	0.826099	3.961251	1.502290
8	-2.783295	5.292495	4.089825	8	-2.780237	5.297539	4.078876	8	-2.848193	5.260495	4.057303
1	-3.288894	4.480666	4.103688	1	-3.287160	4.486524	4.091963	1	-3.342147	4.441551	4.072435
1	-3.393928	5.961286	4.400938	1	-3.390419	5.967396	4.388576	1	-3.469149	5.921433	4.364743
8	-2.677877	-0.046027	-5.489797	8	-2.664219	-0.043934	-5.498978	8	-2.641403	-0.105811	-5.505128
1	-3.290607	0.450196	-4.946295	1	-3.277240	0.453426	-4.956844	1	-3.262591	0.383272	-4.964762
1	-2.448176	0.553813	-6.199971	1	-2.432142	0.555330	-6.208865	1	-2.418472	0.495041	-6.216602
8	0.729367	4.684812	-1.589141	8	0.742786	4.682589	-1.592886	8	0.687573	4.685509	-1.610721
1	-0.094001	4.197457	-1.596363	1	-0.081344	4.196548	-1.601611	1	-0.128708	4.186385	-1.618508
1	1.117158	4.489955	-0.736397	1	1.128561	4.487360	-0.739313	1	1.075896	4.498890	-0.756377
8	0.452862	5.013049	4.374798	8	0.454894	5.013005	4.370395	8	0.390882	5.028346	4.351429
1	-0.093776	5.768802	4.160111	1	-0.090106	5.769568	4.154399	1	-0.165964	5.775514	4.132961
1	0.457802	4.485508	3.576109	1	0.460586	4.485223	3.571869	1	0.405455	4.498440	3.554422
8	2.709150	-0.687791	4.619051	8	2.701572	-0.691364	4.620797	8	2.727950	-0.638787	4.619433
1	2.309241	-0.066920	4.010304	1	2.303872	-0.070031	4.011074	1	2.320773	-0.025612	4.007710
1	3.641884	-0.474621	4.601374	1	3.634679	-0.479690	4.604922	1	3.657576	-0.412327	4.603467
8	-8.016639	1.147778	4.213590	8	-8.020438	1.161229	4.193380	8	-8.021940	1.041610	4.180767
1	-8.777248	0.593245	4.385227	1	-8.782274	0.607963	4.363656	1	-8.774972	0.476773	4.352207
1	-7.820313	1.554102	5.057741	1	-7.825149	1.567484	5.037804	1	-7.833650	1.453335	5.024131
8	4.297609	8.527077	2.995936	8	4.308001	8.520480	2.998205	8	4.188477	8.592794	2.971319
1	3.966277	8.016647	2.256216	1	3.977332	8.010366	2.257971	1	3.866417	8.075364	2.232368
1	5.215698	8.690981	2.780021	1	5.226781	8.682855	2.784078	1	5.104685	8.769165	2.757237
8	8.004451	0.591935	0.551337	8	8.007027	0.578712	0.563302	8	8.014941	0.704006	0.561250
1	7.960290	1.385605	0.018191	1	7.965200	1.372297	0.029841	1	7.960803	1.495296	0.025493
1	7.129063	0.510798	0.932150	1	7.130750	0.499087	0.942390	1	7.139816	0.611521	0.940080
8	6.058903	-3.928061	7.074501	8	6.041228	-3.936268	7.083869	8	6.117370	-3.823047	7.093649
1	6.172814	-3.185555	6.479861	1	6.157513	-3.194118	6.489243	1	6.222180	-3.080842	6.496961
1	6.783971	-4.515980	6.863893	1	6.765774	-4.525406	6.874879	1	6.851329	-4.401168	6.886751
8	2.103724	-3.022677	5.980063	8	2.089696	-3.024883	5.981269	8	2.152490	-2.977854	5.986251
1	2.640679	-2.234526	5.898339	1	2.628073	-2.237614	5.900392	1	2.678312	-2.182347	5.903415
1	1.701412	-3.129414	5.117840	1	1.688936	-3.131227	5.118275	1	1.753991	-3.093033	5.123344
8	-4.640658	-2.785289	1.862688	8	-4.646061	-2.777914	1.850360	8	-4.583870	-2.849982	1.850922
1	-4.806839	-1.995852	2.378388	1	-4.812008	-1.988062	2.365499	1	-4.762679	-2.061404	2.363701
1	-5.511516	-3.112498	1.638332	1	-5.516990	-3.103795	1.624359	1	-5.449363	-3.190336	1.625374
8	-1.121213	9.945973	-2.097019	8	-1.098361	9.946553	-2.105975	8	-1.236844	9.918002	-2.139922
1	-2.064383	9.842985	-1.970844	1	-2.041945	9.845109	-1.981655	1	-2.178768	9.801900	-2.015835
1	-0.749712	9.106524	-1.826378	1	-0.728745	9.106590	-1.834351	1	-0.854064	9.084810	-1.865686
8	-2.608694	1.481660	3.524022	8	-2.572326	1.503568	3.493917	8	-2.741110	1.492951	3.613890
1	-1.956352	1.179339	2.861690	1	-1.895060	1.245221	2.833304	1	-2.164952	1.230687	2.865264
1	-3.064856	2.210446	3.054679	1	-3.045113	2.223886	3.029247	1	-3.250242	2.238660	3.229914
8	-9.608236	0.028576	-2.814207	8	-9.599780	0.042525	-2.837262	8	-9.579055	-0.122193	-2.847511
1	-8.850485	0.468952	-2.429836	1	-8.842097	0.481800	-2.451503	1	-8.828695	0.330193	-2.462595
1	-9.343824	-0.889106	-2.879714	1	-9.336707	-0.875598	-2.901975	1	-9.301360	-1.036192	-2.909446

8	-4.944232	-5.274157	4.768464	8	-4.959417	-5.265447	4.756240	8	-4.859321	-5.333874	4.763750
1	-4.812723	-5.383318	5.710492	1	-4.829965	-5.374544	5.698561	1	-4.728713	-5.438201	5.706452
1	-5.008932	-4.327550	4.644443	1	-5.022356	-4.318775	4.631817	1	-4.937250	-4.388683	4.636578
8	9.480410	-3.834544	-0.092736	8	9.477189	-3.850307	-0.076545	8	9.555817	-3.702853	-0.065078
1	9.682126	-2.994333	-0.503918	1	9.681070	-3.010539	-0.487565	1	9.746548	-2.861123	-0.478392
1	8.669317	-3.676015	0.390171	1	8.665388	-3.690341	0.404694	1	8.741285	-3.554459	0.415250
8	5.070796	5.642967	-4.502465	8	5.091552	5.632955	-4.497805	8	5.022397	5.696695	-4.515943
1	5.790614	5.417456	-3.912730	1	5.809829	5.406465	-3.906569	1	5.743835	5.483362	-3.923664
1	4.304013	5.700799	-3.932944	1	4.323726	5.692178	-3.929835	1	4.253386	5.745308	-3.948572
8	-6.275137	-0.707242	2.876251	8	-6.279236	-0.696963	2.860057	8	-6.250574	-0.792424	2.853742
1	-6.547931	0.155799	3.188525	1	-6.551273	0.166605	3.171537	1	-6.536513	0.067590	3.162594
1	-7.052580	-1.062223	2.446870	1	-7.056387	-1.050825	2.429226	1	-7.021734	-1.159847	2.423498
8	2.183457	2.918043	-7.326432	8	2.205506	2.911827	-7.326751	8	2.181738	2.921880	-7.338672
1	2.978925	3.450201	-7.359126	1	3.001887	3.442704	-7.358009	1	2.969584	3.465280	-7.371012
1	1.875098	3.005434	-6.423697	1	1.895485	2.999974	-6.424659	1	1.869812	3.007658	-6.437009
8	-7.355964	1.778731	-2.024885	8	-7.346295	1.789307	-2.043945	8	-7.354145	1.662511	-2.057960
1	-6.466954	2.097555	-1.867523	1	-6.457092	2.106756	-1.884899	1	-6.470204	1.994533	-1.899331
1	-7.680330	2.320532	-2.744624	1	-7.668356	2.331417	-2.764486	1	-7.684364	2.197363	-2.780230
8	5.302790	-7.843708	4.284550	8	5.284430	-7.851514	4.293541	8	5.424678	-7.757808	4.314141
1	4.634789	-7.226717	4.584959	1	4.616817	-7.233368	4.592437	1	4.747129	-7.149518	4.610893
1	5.902402	-7.928219	5.025759	1	5.882425	-7.936767	5.035970	1	6.023510	-7.831404	5.057143
8	-3.382585	3.522089	1.618009	8	-3.336106	3.504096	1.533277	8	-3.618039	3.562154	1.856434
1	-2.843475	3.159190	0.879621	1	-2.771445	3.122714	0.821301	1	-3.176593	3.128630	1.082776
1	-2.916830	4.318003	1.921640	1	-2.873582	4.304330	1.829052	1	-3.117416	4.367882	2.060077
8	-8.106133	3.757723	-3.717253	8	-8.089917	3.769003	-3.738378	8	-8.128176	3.625263	-3.758475
1	-8.456748	3.388568	-4.527583	1	-8.439502	3.400172	-4.549300	1	-8.471359	3.248596	-4.568529
1	-7.205263	4.000713	-3.934177	1	-7.188228	4.010489	-3.953572	1	-7.230318	3.880461	-3.973861
8	-5.928881	-3.401826	-1.373577	8	-5.928800	-3.393334	-1.388295	8	-5.854705	-3.495005	-1.386665
1	-5.308654	-3.767748	-2.004495	1	-5.307900	-3.760431	-2.017867	1	-5.227662	-3.853967	-2.014838
1	-5.928618	-4.026127	-0.647769	1	-5.930986	-4.017424	-0.662307	1	-5.847389	-4.116973	-0.658891
8	3.152767	-4.399096	-1.670516	8	3.151816	-4.405205	-1.666802	8	3.241036	-4.362946	-1.657240
1	2.311246	-4.853212	-1.718132	1	2.309667	-4.857988	-1.715968	1	2.406232	-4.829220	-1.705574
1	3.802971	-5.080079	-1.844445	1	3.801277	-5.087276	-1.839234	1	3.901378	-5.035079	-1.827356
8	-2.995745	-6.589251	-0.039201	8	-3.003436	-6.585055	-0.047143	8	-2.879699	-6.635894	-0.034746
1	-3.016080	-6.006065	-0.798708	1	-3.021322	-6.002058	-0.806856	1	-2.906409	-6.055429	-0.796137
1	-3.915679	-6.785165	0.135410	1	-3.924028	-6.779447	0.125686	1	-3.797182	-6.844425	0.138130
8	-3.387915	-3.884407	-2.478816	8	-3.386406	-3.880298	-2.488316	8	-3.304222	-3.944567	-2.483877
1	-3.591126	-3.428862	-3.295483	1	-3.587257	-3.424667	-3.305518	1	-3.511811	-3.494529	-3.302494
1	-2.526736	-3.550877	-2.226170	1	-2.525202	-3.548071	-2.234045	1	-2.448568	-3.597943	-2.230083
8	8.416460	3.860588	0.942186	8	8.423479	3.846817	0.954032	8	8.379072	3.979431	0.942837
1	7.928048	3.832166	0.119646	1	7.936667	3.818935	0.130526	1	7.893259	3.941447	0.119145
1	7.834244	4.316872	1.551108	1	7.840779	4.304208	1.561658	1	7.788798	4.429221	1.548826
8	-1.242628	4.429074	-4.365943	8	-1.224066	4.429194	-4.373547	8	-1.273329	4.392880	-4.391731
1	-1.353997	4.466186	-3.415901	1	-1.337273	4.466761	-3.423741	1	-1.387687	4.431355	-3.442100
1	-1.405785	3.512608	-4.589694	1	-1.388240	3.512925	-4.597360	1	-1.422759	3.473477	-4.613007
8	0.910957	-5.861671	-1.689609	8	0.907713	-5.864200	-1.689951	8	1.020461	-5.857550	-1.677448
1	0.327301	-5.740909	-2.438584	1	0.325748	-5.742723	-2.440126	1	0.437085	-5.747500	-2.428290
1	0.954892	-6.810084	-1.570838	1	0.949895	-6.812647	-1.570820	1	1.077667	-6.804860	-1.555574
8	1.563967	-7.222769	5.948383	8	1.543289	-7.224115	5.949722	8	1.673030	-7.185328	5.966444
1	1.670649	-6.731697	5.133437	1	1.652383	-6.733451	5.134848	1	1.774785	-6.695321	5.150227
1	1.303367	-6.563703	6.592261	1	1.282457	-6.564446	6.592887	1	1.401343	-6.528060	6.607570
8	-0.389488	7.670058	3.634188	8	-0.381725	7.671140	3.627338	8	-0.487508	7.670686	3.600288
1	0.320836	8.109798	4.102155	1	0.328364	8.109881	4.096596	1	0.215225	8.122019	4.068679
1	-1.162849	8.203050	3.818703	1	-1.154601	8.205422	3.810154	1	-1.268901	8.193114	3.781143
8	-4.511711	0.726751	5.688812	8	-4.519142	0.735030	5.675723	8	-4.515192	0.675458	5.666265
1	-4.196418	0.965401	6.559729	1	-4.205206	0.973429	6.547198	1	-4.205613	0.921316	6.537227
1	-3.749681	0.834817	5.119304	1	-3.755802	0.841711	5.107706	1	-3.753306	0.792655	5.098366
8	4.637068	1.216218	-5.650975	8	4.653042	1.206570	-5.645905	8	4.655107	1.260625	-5.651588
1	3.934968	1.329877	-5.010790	1	3.949847	1.321538	-5.007156	1	3.949787	1.366206	-5.013561
1	4.600974	2.006991	-6.190081	1	4.619289	1.997243	-6.185310	1	4.609092	2.049114	-6.193277
8	-3.176805	8.796495	0.737110	8	-3.161446	8.801188	0.724372	8	-3.283128	8.748025	0.692554
1	-2.563079	8.122836	0.443626	1	-2.548212	8.126462	0.432308	1	-2.659054	8.082317	0.402766
1	-3.992306	8.591856	0.279111	1	-3.976356	8.597718	0.264803	1	-4.094419	8.530292	0.233120
8	6.380600	-6.960265	1.631477	8	6.368948	-6.970566	1.642371	8	6.496621	-6.867283	1.661057
1	6.208746	-7.057822	2.568789	1	6.195067	-7.067577	2.579367	1	6.323745	-6.964373	2.598230
1	5.634102	-6.461238	1.301893	1	5.623909	-6.470444	1.311154	1	5.743912	-6.380038	1.327995
8	10.351725	-0.861991	0.199176	8	10.352672	-0.879065	0.216251	8	10.383706	-0.717222	0.219681
1	9.514907	-0.527899	0.520981	1	9.515747	-0.543542	0.536287	1	9.541353	-0.394156	0.538290
1	10.984903	-0.613531	0.872135	1	10.984901	-0.631422	0.890401	1	11.011509	-0.457617	0.893467
8	4.207694	7.796849	-1.451944	8	4.225803	7.789102	-1.449635	8	4.120601	7.847488	-1.474450
1	5.029624	7.406473	-1.154268	1	5.046512	7.397500	-1.150206	1	4.947262	7.469861	-1.173444

1	4.187996	8.660275	-1.038184	1	4.206660	8.652679	-1.036164	1	4.087463	8.711829	-1.063467
8	6.662687	6.699975	0.079668	8	6.675975	6.688753	0.087194	8	6.587061	6.790691	0.066885
1	5.959365	6.544796	0.709937	1	5.971148	6.534881	0.716101	1	5.884396	6.627414	0.695840
1	7.250329	7.312943	0.522032	1	7.263712	7.300908	0.530554	1	7.164710	7.413392	0.508814
8	-5.181868	6.324180	-3.131319	8	-5.162729	6.330953	-3.147342	8	-5.242505	6.235178	-3.173167
1	-5.761055	6.433533	-3.885477	1	-5.740232	6.441011	-3.902687	1	-5.821234	6.333867	-3.929144
1	-4.345964	6.694953	-3.415243	1	-4.325667	6.700307	-3.429702	1	-4.411261	6.617006	-3.456122
8	1.012360	-0.027998	-6.275897	8	1.027604	-0.032033	-6.277709	8	1.050228	-0.037352	-6.281845
1	1.791316	-0.579235	-6.348663	1	1.805821	-0.584535	-6.348759	1	1.837185	-0.577593	-6.350880
1	1.197510	0.551903	-5.536952	1	1.212205	0.547786	-5.538562	1	1.225131	0.547443	-5.544262
8	0.873607	-8.724237	-1.227843	8	0.864864	-8.726568	-1.227436	8	1.022914	-8.718903	-1.206750
1	0.070519	-9.019306	-0.799206	1	0.060451	-9.020228	-0.800320	1	0.223023	-9.024114	-0.779239
1	0.905985	-9.222914	-2.044025	1	0.898075	-9.225534	-2.043409	1	1.064556	-9.219607	-2.021270
8	6.989222	5.386197	-2.468407	8	7.005499	5.373712	-2.459845	8	6.939007	5.473788	-2.476190
1	7.013825	4.445484	-2.294310	1	7.028248	4.433011	-2.285428	1	6.976626	4.534071	-2.299063
1	7.264515	5.789939	-1.645974	1	7.279793	5.777253	-1.636980	1	7.206348	5.883996	-1.654333
8	6.690375	-0.715681	-5.131967	8	6.702216	-0.728457	-5.122238	8	6.734516	-0.640022	-5.121239
1	6.834921	-0.286730	-4.288707	1	6.845763	-0.299492	-4.278815	1	6.870709	-0.206416	-4.278971
1	5.827510	-0.407757	-5.411757	1	5.840405	-0.419235	-5.403840	1	5.868060	-0.345369	-5.404204
8	5.401831	-0.370762	3.570474	8	5.396845	-0.378944	3.577512	8	5.418531	-0.286472	3.576748
1	5.060209	-1.248440	3.404747	1	5.054152	-1.256123	3.411355	1	5.089948	-1.169468	3.412918
1	5.078076	0.155072	2.839524	1	5.075392	0.147194	2.845764	1	5.089180	0.232387	2.843316
8	3.807257	-6.075639	1.162333	8	3.797965	-6.081966	1.167833	8	3.912101	-6.021096	1.182550
1	3.351450	-5.649358	0.435916	1	3.344292	-5.655168	0.440384	1	3.452125	-5.603658	0.453628
1	3.622577	-7.007589	1.047683	1	3.612025	-7.013653	1.053082	1	3.741087	-6.955949	1.070368
8	6.380426	-1.609711	5.850982	8	6.368900	-1.618791	5.860326	8	6.408836	-1.504152	5.863647
1	7.286534	-1.337450	5.706119	1	7.275731	-1.348021	5.717195	1	7.311326	-1.219388	5.720242
1	5.871700	-1.091836	5.226536	1	5.862252	-1.100286	5.234716	1	5.894371	-0.995571	5.236271
8	-8.377912	1.589121	1.375671	8	-8.375335	1.602321	1.354617	8	-8.382114	1.468879	1.340553
1	-8.033123	0.779535	0.997789	1	-8.031088	0.792076	0.977658	1	-8.024784	0.663144	0.966111
1	-8.242292	1.490144	2.318314	1	-8.241756	1.503403	2.297558	1	-8.247542	1.374796	2.283848
8	-1.174705	3.007469	8.238375	8	-1.183592	3.011154	8.231290	8	-1.217836	3.011703	8.217141
1	-1.253536	2.771565	7.313561	1	-1.260953	2.775107	7.306389	1	-1.290874	2.771811	7.292877
1	-1.376599	3.943263	8.264103	1	-1.384040	3.947277	8.256345	1	-1.433180	3.944583	8.239400
8	4.687028	3.861431	-6.939899	8	4.709806	3.851324	-6.935488	8	4.670527	3.902250	-6.948719
1	4.907271	4.329390	-6.134777	1	4.929188	4.319165	-6.130063	1	4.881949	4.375825	-6.144517
1	4.671024	4.540643	-7.614540	1	4.696235	4.530364	-7.610356	1	4.646551	4.579057	-7.625539
8	1.828780	1.476959	3.261204	8	1.715983	1.534453	3.413805	8	1.749737	1.529849	3.283301
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1	0.904193	1.565080	3.529349	1	0.903127	1.617726	3.932906	1	0.868060	1.579354	3.679581
8	-0.985913	2.459188	5.552912	8	-0.990312	2.461790	5.546367	8	-1.014225	2.457813	5.533911
1	-1.415240	1.896547	4.908438	1	-1.419251	1.899648	4.901200	1	-1.433772	1.887069	4.890121
1	-0.738638	3.241723	5.060628	1	-0.740804	3.243785	5.054354	1	-0.776905	3.242272	5.039797
8	4.146021	2.800596	4.335020	8	4.144582	2.794640	4.338633	8	4.115442	2.868933	4.328071
1	3.666828	3.629289	4.347499	1	3.666692	3.624101	4.349915	1	3.624399	3.690707	4.336710
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8	-9.285870	-5.107737	-0.138450	8	-9.290973	-5.093517	-0.159386	8	-9.190118	-5.244991	-0.154747
1	-9.242379	-4.234640	0.250442	1	-9.246863	-4.220378	0.229342	1	-9.160149	-4.370153	0.231500
1	-9.895228	-5.013790	-0.871599	1	-9.898715	-4.998810	-0.893778	1	-9.798851	-5.162073	-0.889744
8	-7.916350	-2.267130	-2.840864	8	-7.911518	-2.255891	-2.859876	8	-7.854400	-2.393490	-2.862600
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1	-7.355556	-2.545936	-2.116995	1	-7.352617	-2.535381	-2.134807	1	-7.291555	-2.661971	-2.136422
8	-0.314500	-1.556616	2.126315	8	-0.341064	-1.530034	2.210115	8	-0.330282	-1.455339	2.142098
1	-0.076105	-1.652055	1.189330	1	-0.073359	-1.565228	1.276726	1	0.061432	-1.429503	1.253833
1	-0.406311	-0.589273	2.209039	1	-0.442484	-0.568613	2.335881	1	-0.623447	-0.528303	2.234578
8	-6.069502	3.924025	0.778014	8	-6.062006	3.933359	0.760900	8	-6.105837	3.834751	0.741436
1	-5.152713	3.923056	1.054929	1	-5.145775	3.931005	1.039647	1	-5.189852	3.847784	1.020696
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8	-2.376821	-6.419492	-3.329020	8	-2.377671	-6.417243	-3.335768	8	-2.254714	-6.467540	-3.323492
1	-3.271909	-6.744073	-3.235255	1	-3.273463	-6.740365	-3.243697	1	-3.145303	-6.804621	-3.230989
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8	1.357641	-3.524948	3.251020	8	1.348264	-3.526755	3.250887	8	1.420779	-3.499272	3.256910
1	0.921896	-2.685052	3.104780	1	0.914154	-2.686206	3.103534	1	0.973429	-2.666167	3.106907
1	0.837260	-4.154327	2.751137	1	0.827876	-4.155447	2.750147	1	0.910767	-4.137600	2.757687
8	8.548262	-1.905437	-2.179364	8	8.552298	-1.920320	-2.165587	8	8.601567	-1.793818	-2.160158
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1	8.347086	-2.785493	-1.859834	1	8.349077	-2.799961	-1.846206	1	8.412187	-2.675666	-1.838369
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1	-1.044596	-1.941899	-6.362648	1	-1.032231	-1.942668	-6.368018	1	-0.978870	-1.980795	-6.367816
1	-2.412287	-2.585153	-6.432106	1	-2.400808	-2.583757	-6.440023	1	-2.337023	-2.643798	-6.438740
8	4.471751	-3.505798	2.275423	8	4.464343	-3.512866	2.281507	8	4.536822	-3.438537	2.289220

1	4.528373	-4.425736	2.017139	1	4.520009	-4.432968	2.023602	1	4.607286	-4.358370	2.033986
1	3.676140	-3.454328	2.806493	1	3.667755	-3.459970	2.810971	1	3.739175	-3.396819	2.818088
8	2.210692	3.280027	7.623135	8	2.203459	3.278121	7.622736	8	2.164899	3.330828	7.609699
1	1.372679	2.888999	7.374259	1	1.365321	2.888361	7.372299	1	1.333222	2.927058	7.359917
1	2.349512	2.994850	8.525375	1	2.340020	2.992986	8.525334	1	2.305441	3.050485	8.513187
8	1.587792	-4.172578	-6.914086	8	1.597682	-4.177713	-6.913552	8	1.686622	-4.175229	-6.905481
1	0.837395	-4.020106	-6.340028	1	0.846385	-4.023875	-6.341038	1	0.932627	-4.031737	-6.333826
1	2.117972	-3.381066	-6.830768	1	2.128960	-3.387025	-6.829403	1	2.205192	-3.375945	-6.823306
8	-5.517594	-0.387632	-4.435025	8	-5.506580	-0.380693	-4.449782	8	-5.478671	-0.484787	-4.456545
1	-5.378987	0.554154	-4.539212	1	-5.366260	0.560839	-4.553964	1	-5.353297	0.458558	-4.563349
1	-6.221450	-0.455375	-3.788915	1	-6.211833	-0.447123	-3.805061	1	-6.183163	-0.560596	-3.812026
8	4.376131	-4.748139	-5.615833	8	4.382499	-4.757352	-5.609566	8	4.479532	-4.706720	-5.598296
1	5.006570	-4.655609	-4.901832	1	5.011657	-4.665621	-4.894334	1	5.106722	-4.602939	-4.882982
1	3.685099	-5.302496	-5.253949	1	3.689859	-5.310498	-5.248902	1	3.795571	-5.269792	-5.236430
8	6.613984	2.615994	3.751926	8	6.613407	2.605923	3.760524	8	6.587304	2.717899	3.751873
1	6.828448	1.684756	3.807280	1	6.826272	1.674361	3.816575	1	6.814942	1.790009	3.810713
1	5.676139	2.657080	3.937939	1	5.675259	2.648563	3.944650	1	5.648486	2.746121	3.935356
8	7.330439	-3.370462	1.449114	8	7.324889	-3.382340	1.460872	8	7.395419	-3.264824	1.469798
1	6.529652	-3.021497	1.838140	1	6.523885	-3.031982	1.848198	1	6.588705	-2.926160	1.855674
1	7.998266	-3.246188	2.124135	1	7.991563	-3.258938	2.137191	1	8.059638	-3.128890	2.146129
8	-6.298245	-5.206746	0.502612	8	-6.304797	-5.197114	0.487672	8	-6.203059	-5.299175	0.494259
1	-6.817152	-5.937006	0.165676	1	-6.824196	-5.926642	0.149911	1	-6.710575	-6.037844	0.158304
1	-5.782600	-5.586477	1.214250	1	-5.791182	-5.577462	1.200450	1	-5.683881	-5.669257	1.208409
8	5.164957	2.698414	6.981227	8	5.158066	2.691600	6.986900	8	5.128850	2.789615	6.977184
1	4.210983	2.670016	7.046958	1	4.203920	2.664747	7.050733	1	4.175214	2.747754	7.040564
1	5.336055	2.893441	6.059276	1	5.331317	2.886086	6.065236	1	5.299535	2.984198	6.055062
8	4.242798	2.690469	-1.410807	8	4.228998	2.744840	-1.451334	8	4.217790	2.847731	-1.398685
1	3.689847	1.931968	-1.680010	1	3.722406	1.941277	-1.692178	1	3.690744	2.129484	-1.796501
1	3.870006	3.462667	-1.858317	1	3.914366	3.436462	-2.051134	1	3.842172	3.675304	-1.730463
8	-5.619681	2.781054	-5.261025	8	-5.601951	2.787911	-5.276898	8	-5.623983	2.679520	-5.292797
1	-4.853450	2.953743	-5.808434	1	-4.834353	2.959216	-5.822824	1	-4.858883	2.861464	-5.838786
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8	7.427444	0.490755	-2.721658	8	7.436398	0.477501	-2.710809	8	7.447958	0.584361	-2.712873
1	7.903242	-0.319219	-2.537083	1	7.910531	-0.333178	-2.525051	1	7.934826	-0.218131	-2.524528
1	8.026791	1.002836	-3.264630	1	8.037645	0.988466	-3.252730	1	8.041318	1.103285	-3.255923
8	-4.485026	-2.837326	-4.814085	8	-4.477175	-2.832145	-4.826073	8	-4.410140	-2.920603	-4.825233
1	-4.380910	-2.900053	-5.763007	1	-4.371265	-2.895314	-5.774767	1	-4.302669	-2.984788	-5.773684
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8	-4.899444	4.123514	-1.751306	8	-4.886580	4.130241	-1.766134	8	-4.932180	4.043100	-1.785501
1	-4.964386	4.973242	-2.186133	1	-4.949294	4.979945	-2.201335	1	-5.008154	4.890449	-2.223171
1	-5.371763	4.238420	-0.926680	1	-5.360362	4.246142	-0.942486	1	-5.408241	4.153796	-0.962450
8	-2.090193	-3.559873	2.449396	8	-2.098015	-3.556403	2.442386	8	-2.024106	-3.586104	2.446589
1	-2.936817	-3.255845	2.122340	1	-2.943495	-3.251116	2.113551	1	-2.874143	-3.295259	2.116412
1	-1.521451	-2.792050	2.392561	1	-1.527933	-2.789506	2.386466	1	-1.466274	-2.810390	2.388785
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1	-3.186831	-5.177019	-5.159688	1	-3.182035	-5.174009	-5.168408	1	-3.077672	-5.242515	-5.160134
8	2.176807	1.718349	-4.324437	8	2.198957	1.703851	-4.270164	8	2.226866	1.729125	-4.222526
1	1.834489	2.641579	-4.355017	1	1.827561	2.614142	-4.315472	1	1.830374	2.627288	-4.287618
1	2.150390	1.399026	-3.404111	1	2.125870	1.379799	-3.352642	1	2.122929	1.412612	-3.308006
8	-7.422229	6.093848	2.398868	8	-7.414496	6.105813	2.378424	8	-7.493714	5.990008	2.351974
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1	-7.065440	5.610922	1.653776	1	-7.056992	5.622101	1.634186	1	-7.128108	5.509925	1.609324
8	4.153472	6.304265	1.521233	8	4.163256	6.297473	1.523856	8	4.080029	6.363559	1.503272
1	4.099410	6.089137	2.452155	1	4.106991	6.082703	2.454731	1	4.026633	6.150581	2.434727
1	3.242298	6.402774	1.243604	1	3.252796	6.397357	1.244380	1	3.168263	6.448132	1.223007
8	2.156575	-2.225798	-2.837712	8	2.133437	-2.202326	-2.821579	8	2.203193	-2.146467	-2.775306
1	2.382446	-1.366272	-2.441675	1	2.381304	-1.340829	-2.439575	1	2.413044	-1.288724	-2.360942
1	2.610239	-2.926530	-2.309621	1	2.598322	-2.902221	-2.305573	1	2.674273	-2.849710	-2.270772
8	-5.055610	-7.480752	-3.074277	8	-5.058656	-7.474145	-3.086071	8	-4.918680	-7.566280	-3.072249
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8	1.326726	4.239979	-4.827384	8	1.345899	4.235859	-4.829801	8	1.299662	4.239189	-4.846007
1	1.740778	4.916671	-4.291239	1	1.759962	4.912043	-4.293024	1	1.702586	4.923413	-4.310942
1	0.433270	4.555086	-4.961632	1	0.453219	4.552354	-4.965923	1	0.402138	4.541039	-4.983530
8	-7.191643	-4.651606	-4.261703	8	-7.187788	-4.641936	-4.278577	8	-7.091921	-4.771754	-4.274051
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8	4.434897	-6.851512	-1.826021	8	4.430331	-6.859711	-1.819038	8	4.558559	-6.797208	-1.801729
1	4.371332	-7.341711	-1.006487	1	4.364346	-7.349570	-0.999491	1	4.499891	-7.285711	-0.980817
1	5.253066	-7.150467	-2.221193	1	5.248809	-7.160088	-2.212488	1	5.381952	-7.085637	-2.193863

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1	-0.565890	1.412118	-2.956332	1	-0.597440	1.401924	-2.865202	1	-0.715502	1.510668	-2.826039
1	-1.284505	0.804017	-4.193068	1	-1.253813	0.784373	-4.133032	1	-1.232530	0.776658	-4.112414
8	5.097330	0.401674	0.877017	8	3.751029	0.077776	0.598302	8	3.993290	0.219441	0.594749
1	4.381383	1.048209	0.748648	1	3.204084	1.220150	0.888752	1	0.554848	1.740776	-0.418096
1	5.195880	-0.040550	0.001062	1	4.466117	-0.039762	-0.062262	1	4.648155	-0.073016	-0.092120
8	-2.349771	5.867350	-6.413304	8	-2.324816	5.868642	-6.423531	8	-2.395628	5.808752	-6.446444
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8	-9.954416	-2.570294	-0.336485	8	-9.955065	-2.555067	-0.359487	8	-9.894422	-2.718020	-0.362495
1	-9.972315	-2.213951	0.551198	1	-9.974167	-2.198437	0.528056	1	-9.919732	-2.359204	0.524010
1	-10.868794	-2.550852	-0.619954	1	-10.868842	-2.534246	-0.644788	1	-10.808244	-2.712567	-0.648361
8	-7.497397	-1.028515	0.091158	8	-7.496442	-1.017092	0.072620	8	-7.460858	-1.139861	0.066561
1	-8.072838	-1.717972	-0.239453	1	-8.072325	-1.705726	-0.258942	1	-8.025505	-1.838523	-0.263343
1	-6.688598	-1.130098	-0.410454	1	-6.686806	-1.120114	-0.427346	1	-6.649385	-1.231406	-0.432658
8	0.659795	-4.937263	-4.482558	8	0.663609	-4.940205	-4.483664	8	0.763351	-4.945549	-4.473934
1	1.423394	-5.495638	-4.628688	1	1.426605	-5.499843	-4.628106	1	1.535247	-5.493377	-4.616348
1	1.021813	-4.056795	-4.388736	1	1.026846	-4.060290	-4.389372	1	1.112475	-4.059696	-4.381965
8	-5.071438	8.141069	-1.030421	8	-5.053590	8.148275	-1.046752	8	-5.163575	8.060005	-1.077738
1	-5.157512	7.517363	-1.751877	1	-5.139220	7.524498	-1.768198	1	-5.238830	7.432884	-1.797439
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8	5.991621	-4.662200	-3.576375	8	5.994048	-4.673400	-3.566908	8	6.088316	-4.591279	-3.554995
1	6.185321	-5.552273	-3.282045	1	6.185736	-5.563696	-3.271935	1	6.293978	-5.477564	-3.257364
1	6.039686	-4.130981	-2.781547	1	6.041374	-4.142027	-2.772139	1	6.126699	-4.056951	-2.761727
8	7.454672	-3.301226	-5.567042	8	7.463246	-3.315347	-5.555041	8	7.536896	-3.215693	-5.546201
1	6.823809	-3.844150	-5.096039	1	6.830576	-3.857124	-5.085143	1	6.912651	-3.766130	-5.075101
1	7.176548	-2.402227	-5.390036	1	7.186207	-2.415852	-5.378849	1	7.245465	-2.320223	-5.372743
8	-8.430276	-2.680660	3.994303	8	-8.439756	-2.666607	3.974369	8	-8.380128	-2.793028	3.972502
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8	3.396702	5.579953	4.038583	8	3.400302	5.575105	4.039899	8	3.327165	5.636327	4.020952
1	2.518963	5.605410	4.417928	1	2.521849	5.602075	4.417481	1	2.448168	5.650385	4.397970
1	3.938850	6.074901	4.653076	1	3.942012	6.069364	4.655331	1	3.860569	6.140907	4.635265
8	3.548685	0.867751	-8.531059	8	3.569857	0.859005	-8.528056	8	3.579321	0.887619	-8.533330
1	4.347000	0.691658	-8.033920	1	4.366896	0.681780	-8.029273	1	4.378780	0.724533	-8.033600
1	3.001162	1.376387	-7.933170	1	3.021955	1.368689	-7.931409	1	3.023015	1.390216	-7.938451
8	2.913046	-6.926611	-4.215319	8	2.913138	-6.933074	-4.211350	8	3.044161	-6.901558	-4.194660
1	3.591705	-6.831086	-3.546393	1	3.590612	-6.838439	-3.541096	1	3.719640	-6.794232	-3.524305
1	3.324101	-7.455503	-4.898667	1	3.324711	-7.462821	-4.893723	1	3.464525	-7.426633	-4.875283
8	1.630879	-6.929994	3.143839	8	1.616271	-6.932264	3.145232	8	1.743037	-6.900370	3.161170
1	0.699677	-6.988309	2.931937	1	0.685402	-6.989152	2.931487	1	0.813320	-6.972684	2.947073
1	2.009248	-6.427227	2.422866	1	1.996882	-6.430312	2.424872	1	2.116040	-6.394482	2.439585
8	-5.020238	-3.206299	7.773407	8	-5.038118	-3.196595	7.760430	8	-4.972753	-3.257958	7.761950
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8	-5.390622	-6.750072	2.418694	8	-5.403472	-6.741331	2.406009	8	-5.278413	-6.823353	2.417515
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8	-5.245787	-2.300986	5.175594	8	-5.257031	-2.291680	5.161911	8	-5.204488	-2.364075	5.160726
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8	-1.302951	7.263660	-1.481064	8	-1.285619	7.264713	-1.489612	8	-1.381748	7.235292	-1.515975
1	-1.286069	6.678880	-0.724114	1	-1.271183	6.680127	-0.732461	1	-1.358459	6.653176	-0.757143
1	-1.364426	6.677183	-2.235471	1	-1.346524	6.678116	-2.243971	1	-1.432854	6.645646	-2.268682
8	-1.672340	-8.779832	0.285605	8	-1.684187	-8.777653	0.280937	8	-1.525904	-8.806260	0.300352
1	-2.254195	-8.028755	0.170657	1	-2.264609	-8.025680	0.164612	1	-2.118156	-8.063960	0.181549
1	-1.715581	-8.976496	1.220520	1	-1.729609	-8.973976	1.215821	1	-1.568755	-9.000608	1.235769
8	5.191294	-0.520526	-1.643326	8	5.196484	-0.529890	-1.636656	8	5.223725	-0.455494	-1.637076
1	4.318052	-0.251139	-1.926150	1	4.324241	-0.259190	-1.921302	1	4.347451	-0.199532	-1.922980
1	5.788228	0.037710	-2.141021	1	5.795302	0.027246	-2.133318	1	5.813892	0.109685	-2.135002
8	0.122335	-4.704992	1.035158	8	0.115501	-4.705468	1.032901	8	0.208269	-4.703800	1.041631
1	0.111791	-4.830034	0.086313	1	0.106652	-4.830769	0.084072	1	0.201984	-4.831939	0.093160
1	-0.782494	-4.485344	1.258104	1	-0.789420	-4.484310	1.253976	1	-0.700192	-4.496450	1.261569

CHEMICAL REACTION: Nucleophilic attack of OH⁻ on the phosphodiester P–O bond

TOTAL GIBBS FREE ENERGY (a.u.)		
REACTIVE COMPLEX	**TRANSITION STATE**	**PRODUCT COMPLEX**
−2206.469129	−2206.436527	−2206.47897
	NImag = 1, −237 cm⁻¹	

GEOMETRIES											
REACTIVE COMPLEX				**TRANSITION STATE**				**PRODUCT COMPLEX**			
15	1.362535	0.568695	-0.609763	15	1.591034	0.768316	-0.425213	15	2.180875	0.634911	-0.469134
15	-1.460125	0.945386	-0.054069	15	-1.293074	0.926187	-0.022803	15	-1.538686	1.065155	0.447582
8	1.397908	-0.846144	0.160238	8	1.518339	-0.561425	0.489317	8	1.587793	-0.714538	0.142590
8	-2.401203	-0.301153	-0.471298	8	-2.257348	-0.330208	-0.399455	8	-3.052807	0.598419	0.919107
8	-0.239206	0.541628	-1.054230	8	-0.072534	0.490035	-0.957388	8	-1.145003	0.212704	-0.745738
8	1.538553	1.753325	0.274382	8	1.293278	2.127979	0.157939	8	1.268100	1.804864	-0.248133
8	-1.076001	0.907457	1.405250	8	-0.984424	0.930845	1.470671	8	-0.784359	0.908355	1.787364
8	2.176946	0.432596	-1.880527	8	2.341609	0.507903	-1.720801	8	2.707167	0.402267	-1.882228
8	-2.097817	2.241355	-0.504507	8	-1.971352	2.204443	-0.490600	8	-1.692925	2.586630	0.122019
6	2.639666	-1.252484	0.795659	6	2.637543	-1.412499	0.757940	6	2.488960	-1.746261	0.563903
6	-3.797212	-0.217409	-0.181067	6	-3.644482	-0.215290	-0.096151	6	-4.086858	0.614098	-0.040227
1	2.915416	-2.219602	0.373587	1	2.309655	-2.435930	0.556500	1	1.960674	-2.694101	0.463124
1	3.437997	-0.519767	0.642951	1	3.496608	-1.148885	0.144012	1	3.398857	-1.758198	-0.041113
1	-4.242198	0.608960	-0.739255	1	-4.091827	0.582534	-0.694449	1	-3.811701	0.039534	-0.931152
1	-3.959843	-0.079368	0.893137	1	-3.792203	-0.011094	0.970965	1	-4.320058	1.644176	-0.343691
1	2.440159	-1.339259	1.864612	1	2.894678	-1.307674	1.813122	1	2.738815	-1.580670	1.613769
1	-4.228519	-1.168179	-0.495091	1	-4.094256	-1.177430	-0.344447	1	-4.969940	0.174810	0.431163
8	4.673492	1.194246	1.571054	8	3.568113	1.048290	0.772334	8	3.485732	0.839179	0.530766
1	5.123741	1.936865	2.003199	1	3.597156	1.987711	1.015429	1	4.107610	1.429336	0.053105
8	7.004814	2.754387	-1.330218	8	7.016375	2.761520	-1.252188	8	6.966332	2.920645	-1.215517
1	7.429860	2.053879	-1.824923	1	7.446599	2.063772	-1.746315	1	7.418636	2.230208	-1.700104
1	6.067931	2.586736	-1.433518	1	6.080639	2.593289	-1.364544	1	6.036217	2.728679	-1.336195
8	6.438659	-3.515732	-1.251357	8	6.456870	-3.509529	-1.207071	8	6.560209	-3.361785	-1.130239
1	5.974862	-2.680603	-1.302488	1	5.992568	-2.674697	-1.258479	1	6.076150	-2.539000	-1.192495
1	6.502746	-3.697605	-0.313814	1	6.512872	-3.695633	-0.269841	1	6.611009	-3.539832	-0.191149
8	-3.450729	2.810745	-6.985319	8	-3.388787	2.832055	-6.999304	8	-3.377131	2.694844	-7.069021
1	-3.563922	2.391370	-7.837686	1	-3.493945	2.416471	-7.854552	1	-3.463178	2.270771	-7.922236
1	-2.720035	3.416495	-7.111304	1	-2.657715	3.439202	-7.116039	1	-2.659981	3.318936	-7.182719
8	1.697493	-1.900902	8.361742	8	1.628904	-1.944207	8.370309	8	1.596090	-1.847972	8.386267
1	1.779126	-2.347122	7.519963	1	1.718558	-2.386465	7.527921	1	1.705257	-2.293838	7.547427
1	1.114178	-2.461042	8.873807	1	1.041791	-2.507350	8.875289	1	1.017686	-2.421798	8.888658
8	1.118562	-4.853417	7.621280	8	1.060052	-4.893942	7.611901	8	1.107550	-4.816085	7.643017
1	0.195975	-4.617735	7.520279	1	0.138120	-4.658839	7.503818	1	0.181308	-4.604480	7.523802
1	1.569447	-4.352606	6.941550	1	1.516347	-4.389507	6.938491	1	1.558324	-4.305358	6.970633
8	-1.278934	-3.777106	5.485101	8	-1.319707	-3.810537	5.459536	8	-1.275537	-3.806723	5.458578
1	-1.702984	-3.377738	4.725225	1	-1.737484	-3.408163	4.697775	1	-1.695107	-3.420129	4.689664
1	-1.638891	-4.663529	5.521655	1	-1.678938	-4.697524	5.488841	1	-1.613213	-4.702041	5.490700
8	-8.343716	-6.569677	-2.751731	8	-8.308075	-6.573220	-2.852220	8	-8.107338	-6.798959	-2.903720
1	-7.789945	-5.881729	-3.119947	1	-7.751872	-5.882965	-3.212363	1	-7.564501	-6.097804	-3.263201
1	-9.237101	-6.295933	-2.962201	1	-9.199882	-6.299521	-3.069334	1	-9.003279	-6.548799	-3.131932
8	0.054847	6.340216	6.733553	8	-0.008845	6.302443	6.766090	8	-0.226509	6.344395	6.704433
1	0.281881	5.809996	5.970452	1	0.225550	5.775989	6.002608	1	0.028639	5.818481	5.947258
1	-0.900016	6.402557	6.706657	1	-0.963505	6.363830	6.731028	1	-1.181971	6.382053	6.659169
8	2.536996	4.143109	0.622373	8	2.412459	4.321224	0.638751	8	2.439607	3.924246	0.556448
1	3.393884	4.568457	0.790732	1	3.334030	4.550215	0.444009	1	2.912122	3.838348	1.397650
1	2.776489	3.248807	0.291779	1	2.271672	3.377533	0.357593	1	2.023852	3.024580	0.350062
8	-1.007443	-2.375689	-1.990032	8	-0.983733	-2.374504	-2.006401	8	-0.897260	-2.415638	-2.013843
1	-1.411846	-1.618460	-1.566216	1	-1.392753	-1.619685	-1.582716	1	-1.329033	-1.668125	-1.599893
1	-0.076925	-2.155140	-2.037289	1	-0.053091	-2.152691	-2.044407	1	0.028013	-2.171295	-2.043959
8	7.607427	5.149728	3.499989	8	7.573432	5.135334	3.594089	8	7.414651	5.341605	3.618702
1	7.228578	4.276740	3.604988	1	7.194690	4.261446	3.691730	1	7.056440	4.459384	3.718858
1	7.195731	5.672901	4.188333	1	7.155051	5.654876	4.281151	1	6.976546	5.855548	4.297633
8	-3.880851	1.910699	-2.834168	8	-3.854566	1.912472	-2.856290	8	-3.863280	1.793379	-2.924366
1	-4.029112	2.732945	-2.367645	1	-4.007909	2.732399	-2.387336	1	-4.041533	2.612582	-2.463015
1	-2.930168	1.853835	-2.925126	1	-2.903049	1.857099	-2.939089	1	-2.909882	1.760825	-2.997030
8	-4.922149	3.379615	4.926163	8	-4.966194	3.344561	4.901167	8	-5.090242	3.252475	4.810641
1	-4.692748	2.497563	5.219628	1	-4.738367	2.461431	5.192607	1	-4.843887	2.377292	5.110848

S93

1	-5.772977	3.552325	5.330775	1	-5.820770	3.514452	5.299019	1	-5.952814	3.404119	5.198486
8	-0.990669	6.482693	1.089516	8	-1.004553	6.469656	1.113731	8	-1.167205	6.447157	1.041123
1	-1.238284	6.679903	1.992552	1	-1.260378	6.662439	2.015434	1	-1.437036	6.639960	1.938730
1	-0.768152	5.552269	1.099187	1	-0.781044	5.539450	1.121108	1	-0.921060	5.522801	1.057588
8	2.646024	5.944162	-3.027982	8	2.669051	5.954140	-2.973837	8	2.560220	5.993221	-3.004812
1	3.342122	6.355410	-2.515184	1	3.360104	6.363814	-2.453018	1	3.235576	6.423422	-2.479969
1	2.017059	5.635926	-2.375764	1	2.034702	5.642204	-2.328632	1	1.927031	5.670353	-2.363858
8	-0.706956	-0.288312	-8.234621	8	-0.630451	-0.258136	-8.238455	8	-0.531175	-0.335300	-8.257279
1	-0.126529	-0.106213	-7.495048	1	-0.056802	-0.078781	-7.492947	1	0.030126	-0.136639	-7.507280
1	-0.284733	-1.013168	-8.695858	1	-0.203318	-0.980390	-8.699253	1	-0.081707	-1.050075	-8.708392
8	3.257990	-8.678345	0.340523	8	3.268276	-8.682981	0.332920	8	3.483496	-8.601031	0.414899
1	3.602414	-9.545231	0.129130	1	3.615570	-9.548499	0.120614	1	3.854081	-9.459230	0.212490
1	2.492345	-8.579544	-0.226216	1	2.507559	-8.582442	-0.240117	1	2.726542	-8.523268	-0.166602
8	1.697879	7.719122	1.328201	8	1.680332	7.708007	1.381870	8	1.483599	7.752981	1.327615
1	0.961046	7.181946	1.618742	1	0.941585	7.168673	1.663412	1	0.755402	7.197657	1.605532
1	1.297067	8.537807	1.035340	1	1.281170	8.527576	1.089225	1	1.067540	8.560405	1.024918
8	-2.150875	4.522854	-1.788120	8	-2.141925	4.476830	-1.784696	8	-2.214304	4.304574	-1.801072
1	-1.937015	3.684712	-1.311085	1	-1.908285	3.635547	-1.315702	1	-1.951669	3.587541	-1.152056
1	-3.127635	4.493715	-1.771297	1	-3.118973	4.443619	-1.753821	1	-3.191052	4.260287	-1.775997
8	-1.389419	-6.867834	3.791706	8	-1.411596	-6.893579	3.751087	8	-1.274095	-6.903083	3.771882
1	-1.638198	-6.231545	3.121216	1	-1.655177	-6.254499	3.081343	1	-1.526286	-6.274928	3.095026
1	-1.845960	-7.671370	3.539619	1	-1.864950	-7.696464	3.491289	1	-1.704915	-7.718682	3.513346
8	3.033339	-2.300517	-5.484480	8	3.087716	-2.278729	-5.464560	8	3.206348	-2.244260	-5.430825
1	2.938367	-2.093101	-4.555256	1	2.984285	-2.075690	-4.535273	1	3.088319	-2.037265	-4.504154
1	3.471566	-3.151662	-5.496640	1	3.527027	-3.129315	-5.476740	1	3.666472	-3.083858	-5.432291
8	-1.010309	-2.898630	8.054144	8	-1.074847	-2.943565	8.034855	8	-1.078778	-2.915826	8.029853
1	-1.331831	-3.171846	7.194442	1	-1.388432	-3.213194	7.171098	1	-1.376666	-3.199175	7.164933
1	-0.931218	-1.946399	7.988797	1	-0.996295	-1.990956	7.974574	1	-1.022968	-1.962024	7.963409
8	0.048722	3.894271	1.819890	8	-0.095016	3.955014	1.865896	8	-0.139099	4.093160	1.776662
1	-0.229211	2.963904	1.708106	1	-0.292231	3.031673	1.604781	1	-0.636418	3.369905	1.316916
1	0.973757	3.902882	1.473357	1	0.817035	4.086810	1.533301	1	0.738735	4.096028	1.357270
8	-2.685417	5.321750	4.090371	8	-2.724425	5.293035	4.094115	8	-2.888620	5.249706	4.012305
1	-3.195371	4.512807	4.111447	1	-3.233601	4.483429	4.106970	1	-3.377912	4.427942	4.025879
1	-3.289536	5.994966	4.404637	1	-3.332088	5.964119	4.406103	1	-3.515753	5.907840	4.313149
8	-2.694810	-0.048987	-5.471805	8	-2.642947	-0.033742	-5.492277	8	-2.577003	-0.141040	-5.533524
1	-3.299920	0.452447	-4.924561	1	-3.253460	0.464491	-4.948119	1	-3.205164	0.345870	-4.999293
1	-2.468106	0.547205	-6.186002	1	-2.410630	0.565978	-6.201699	1	-2.352088	0.459182	-6.244904
8	0.773192	4.675658	-1.617461	8	0.785297	4.677062	-1.585777	8	0.693994	4.680069	-1.626767
1	-0.052901	4.192884	-1.615740	1	-0.040214	4.193354	-1.593580	1	-0.119291	4.176176	-1.639467
1	1.167460	4.481465	-0.767541	1	1.172257	4.479413	-0.733299	1	1.076799	4.498017	-0.768956
8	0.551544	5.025191	4.347559	8	0.510478	4.998949	4.378586	8	0.349386	5.037226	4.331961
1	0.007225	5.783267	4.135191	1	-0.032827	5.757378	4.164884	1	-0.210088	5.780545	4.107175
1	0.546456	4.494986	3.550636	1	0.513059	4.472404	3.579228	1	0.373177	4.505270	3.536545
8	2.778230	-0.687314	4.590953	8	2.741595	-0.712099	4.615506	8	2.717182	-0.615449	4.633446
1	2.376378	-0.066241	3.983693	1	2.344406	-0.088697	4.007564	1	2.311178	-0.006306	4.016932
1	3.711939	-0.479413	4.564285	1	3.675260	-0.503025	4.598056	1	3.645574	-0.383621	4.624008
8	-7.940384	1.206742	4.274496	8	-7.976005	1.171302	4.212859	8	-8.038583	1.001096	4.107532
1	-8.702503	0.657036	4.454738	1	-8.739046	0.619914	4.383827	1	-8.789621	0.432343	4.274724
1	-7.734307	1.614759	5.115500	1	-7.777853	1.575684	5.057515	1	-7.859189	1.416182	4.951188
8	4.403334	8.513115	2.922833	8	4.370643	8.497720	3.004009	8	4.136746	8.620011	2.971340
1	4.062610	8.002095	2.187801	1	4.037033	7.989697	2.263657	1	3.823397	8.098727	2.231354
1	5.320362	8.671177	2.698232	1	5.289438	8.657846	2.788261	1	5.053535	8.801141	2.763826
8	8.044180	0.549351	0.472140	8	8.042310	0.549404	0.549178	8	8.027399	0.747191	0.612376
1	7.999689	1.341483	-0.063258	1	8.001652	1.343937	0.017042	1	7.972799	1.536705	0.074053
1	7.171777	0.474363	0.860975	1	7.166609	0.471648	0.929927	1	7.149936	0.650627	0.984714
8	6.131638	-3.938078	7.027470	8	6.077112	-3.970234	7.066692	8	6.105867	-3.773231	7.142361
1	6.244378	-3.198195	6.429350	1	6.194275	-3.227485	6.472989	1	6.210961	-3.032039	6.544467
1	6.851530	-4.530730	6.812416	1	6.799570	-4.561079	6.855305	1	6.844743	-4.347620	6.942696
8	2.171974	-3.014263	5.965126	8	2.125925	-3.046015	5.973581	8	2.144798	-2.954140	6.002199
1	2.712548	-2.229396	5.875992	1	2.666349	-2.260139	5.892833	1	2.666614	-2.155810	5.921229
1	1.761425	-3.121607	5.106869	1	1.723110	-3.149881	5.111241	1	1.753634	-3.073963	5.136571
8	-4.607324	-2.752876	1.906974	8	-4.617507	-2.773641	1.856817	8	-4.560125	-2.876660	1.814858
1	-4.764528	-1.960817	2.421469	1	-4.780181	-1.984132	2.373524	1	-4.747458	-2.087758	2.324086
1	-5.481947	-3.075958	1.691454	1	-5.489810	-3.096717	1.632085	1	-5.421866	-3.222656	1.583594
8	-1.052592	9.945355	-2.126589	8	-1.042066	9.946979	-2.086896	8	-1.256635	9.899814	-2.185077
1	-1.995160	9.848051	-1.991706	1	-1.985677	9.847993	-1.960810	1	-2.198797	9.778561	-2.067919
1	-0.683365	9.104747	-1.856435	1	-0.674262	9.105555	-1.817339	1	-0.871147	9.069608	-1.905627
8	-2.685531	1.494503	3.608793	8	-2.689450	1.480610	3.580299	8	-2.753378	1.417994	3.680460
1	-2.103786	1.115230	2.915097	1	-2.079103	1.141474	2.885347	1	-2.108264	1.042160	3.034335
1	-3.118899	2.224685	3.124126	1	-3.130463	2.210878	3.102214	1	-3.249074	2.053928	3.127075
8	-9.600587	0.073162	-2.735101	8	-9.572804	0.068051	-2.816280	8	-9.534716	-0.190687	-2.929297

1	-8.837015	0.510572	-2.358952	1	-8.813101	0.504590	-2.431387	1	-8.789979	0.267098	-2.539866
1	-9.341867	-0.846193	-2.799865	1	-9.312447	-0.850705	-2.882964	1	-9.251247	-1.103216	-2.986594
8	-4.898869	-5.230370	4.823681	8	-4.931949	-5.264830	4.759446	8	-4.843590	-5.354260	4.732271
1	-4.759597	-5.337141	5.764867	1	-4.800884	-5.375765	5.701329	1	-4.719644	-5.455285	5.676231
1	-4.959409	-4.283833	4.697055	1	-4.992473	-4.317790	4.636628	1	-4.926020	-4.409884	4.601916
8	9.489757	-3.887407	-0.170115	8	9.498715	-3.882724	-0.100577	8	9.598618	-3.652286	0.009981
1	9.692471	-3.049703	-0.585892	1	9.704120	-3.042891	-0.510701	1	9.787636	-2.810576	-0.404156
1	8.683882	-3.722754	0.319435	1	8.688348	-3.721230	0.382569	1	8.779559	-3.507347	0.483626
8	5.093800	5.599907	-4.572392	8	5.130796	5.619742	-4.498079	8	5.045130	5.708666	-4.501332
1	5.817570	5.372337	-3.988312	1	5.849635	5.390308	-3.908664	1	5.763209	5.501135	-3.902939
1	4.332444	5.663905	-3.996289	1	4.364299	5.680236	-3.928451	1	4.271501	5.754325	-3.940024
8	-6.221166	-0.662390	2.928004	8	-6.242759	-0.689687	2.873088	8	-6.246426	-0.826152	2.799194
1	-6.486378	0.203189	3.239782	1	-6.511730	0.174151	3.186469	1	-6.539726	0.033007	3.103481
1	-7.004355	-1.014448	2.506734	1	-7.021778	-1.040690	2.443293	1	-7.012102	-1.199221	2.364041
8	2.166385	2.881800	-7.361453	8	2.231348	2.911172	-7.325370	8	2.242465	2.909753	-7.338210
1	2.964474	3.409400	-7.402992	1	3.029155	3.439856	-7.357424	1	3.027368	3.457646	-7.365978
1	1.866553	2.973902	-6.456317	1	1.923412	2.998778	-6.422511	1	1.923105	2.996140	-6.439211
8	-7.331704	1.813324	-1.971682	8	-7.312798	1.807246	-2.024841	8	-7.326351	1.609071	-2.127551
1	-6.439576	2.127702	-1.823286	1	-6.422385	2.121946	-1.867115	1	-6.445605	1.946665	-1.963041
1	-7.659445	2.354542	-2.690333	1	-7.634800	2.351388	-2.743878	1	-7.654097	2.140043	-2.853802
8	5.329023	-7.858666	4.257520	8	5.303615	-7.878963	4.271810	8	5.457468	-7.719432	4.368393
1	4.667154	-7.236964	4.561766	1	4.638355	-7.259411	4.573031	1	4.774133	-7.114305	4.658259
1	5.934722	-7.944066	4.993659	1	5.902877	-7.967060	5.012883	1	6.050974	-7.787539	5.116176
8	-3.353979	3.511609	1.599107	8	-3.347533	3.462031	1.533309	8	-3.590682	3.559250	1.704386
1	-2.885890	3.064762	0.851399	1	-2.873294	2.985674	0.804525	1	-2.909217	3.179582	1.076887
1	-2.760705	4.226962	1.878532	1	-2.734079	4.166064	1.800237	1	-3.171411	4.352004	2.075941
8	-8.085891	3.790856	-3.663973	8	-8.054294	3.791676	-3.714664	8	-8.098642	3.562693	-3.839337
1	-8.445740	3.420982	-4.469914	1	-8.406566	3.425101	-4.525445	1	-8.433379	3.181854	-4.650971
1	-7.185649	4.028093	-3.889695	1	-7.152368	4.030963	-3.931319	1	-7.200646	3.822538	-4.048508
8	-5.927672	-3.372930	-1.315644	8	-5.908567	-3.380379	-1.380170	8	-5.802213	-3.537793	-1.430627
1	-5.315120	-3.744399	-1.950805	1	-5.289986	-3.748236	-2.011579	1	-5.168274	-3.894787	-2.052973
1	-5.924424	-3.994816	-0.587771	1	-5.911032	-4.005597	-0.655154	1	-5.796894	-4.157746	-0.701118
8	3.145298	-4.421854	-1.689786	8	3.168578	-4.417342	-1.678784	8	3.300229	-4.353446	-1.628875
1	2.300880	-4.871422	-1.728409	1	2.325060	-4.867680	-1.726939	1	2.468544	-4.824707	-1.682351
1	3.790140	-5.107031	-1.867186	1	3.815764	-5.100969	-1.853606	1	3.965753	-5.022180	-1.792068
8	-3.000531	-6.572241	0.003367	8	-2.989474	-6.582410	-0.049972	8	-2.819525	-6.657642	-0.047278
1	-3.024380	-5.991471	-0.757885	1	-3.007266	-5.998178	-0.808736	1	-2.843738	-6.079398	-0.810437
1	-3.919950	-6.762435	0.186790	1	-3.910257	-6.774482	0.124432	1	-3.737089	-6.871048	0.119109
8	-3.399352	-3.873346	-2.441753	8	-3.369800	-3.872767	-2.486135	8	-3.240784	-3.975439	-2.506959
1	-3.607282	-3.419383	-3.258113	1	-3.571014	-3.415295	-3.302215	1	-3.444669	-3.528826	-3.328379
1	-2.534123	-3.543794	-2.197880	1	-2.507148	-3.543363	-2.233105	1	-2.389139	-3.623156	-2.247544
8	8.477790	3.816929	0.848325	8	8.468777	3.815708	0.944155	8	8.369559	4.025697	0.987782
1	7.981934	3.788509	0.030251	1	7.980212	3.790486	0.121602	1	7.890335	3.982666	0.160486
1	7.903553	4.278473	1.460849	1	7.888605	4.273786	1.553680	1	7.772032	4.473672	1.587978
8	-1.224802	4.421732	-4.375783	8	-1.187918	4.433552	-4.362812	8	-1.243688	4.368530	-4.421965
1	-1.327514	4.462613	-3.424920	1	-1.299085	4.469950	-3.412718	1	-1.365584	4.408894	-3.473348
1	-1.395028	3.505455	-4.594994	1	-1.355127	3.518099	-4.587718	1	-1.386069	3.447678	-4.641864
8	0.895322	-5.871949	-1.684071	8	0.920334	-5.869984	-1.699631	8	1.088590	-5.861013	-1.662066
1	0.305710	-5.750415	-2.428242	1	0.337187	-5.745699	-2.448427	1	0.510388	-5.756390	-2.417671
1	0.935046	-6.820194	-1.562508	1	0.960089	-6.818732	-1.582067	1	1.150355	-6.807644	-1.537163
8	1.608645	-7.211358	5.952358	8	1.567635	-7.243640	5.936597	8	1.689940	-7.164374	5.990224
1	1.710803	-6.723593	5.134853	1	1.676452	-6.752011	5.122272	1	1.795137	-6.675983	5.173479
1	1.357441	-6.548712	6.596304	1	1.309970	-6.584249	6.581323	1	1.409507	-6.506977	6.627442
8	-0.282591	7.684392	3.605521	8	-0.320166	7.660587	3.641385	8	-0.538516	7.672372	3.566856
1	0.434297	8.121710	4.065686	1	0.392111	8.096595	4.109877	1	0.157956	8.129052	4.039400
1	-1.051310	8.222301	3.795097	1	-1.091160	8.196752	3.826611	1	-1.324299	8.190722	3.740267
8	-4.424870	0.771047	5.719972	8	-4.472910	0.732939	5.687387	8	-4.541316	0.659384	5.620948
1	-4.100526	1.010817	6.587251	1	-4.156532	0.969089	6.558592	1	-4.239893	0.909386	6.493589
1	-3.667346	0.872971	5.143366	1	-3.710434	0.838363	5.117982	1	-3.775774	0.779490	5.058608
8	4.625306	1.171868	-5.702117	8	4.677489	1.196412	-5.652184	8	4.712361	1.267489	-5.627615
1	3.929569	1.291564	-5.056114	1	3.975924	1.312355	-5.011824	1	4.001546	1.370676	-4.995322
1	4.588814	1.961039	-6.243538	1	4.644866	1.988019	-6.190285	1	4.665947	2.054234	-6.171798
8	-3.089256	8.816765	0.729514	8	-3.102599	8.802989	0.745865	8	-3.317855	8.725567	0.634775
1	-2.481915	8.138723	0.432864	1	-2.491865	8.127002	0.451498	1	-2.687714	8.062731	0.351617
1	-3.909921	8.615164	0.279459	1	-3.919014	8.602532	0.287643	1	-4.124305	8.501876	0.169713
8	6.388092	-6.990047	1.592033	8	6.385208	-6.996919	1.619811	8	6.544634	-6.829828	1.721203
1	6.224039	-7.083537	2.531155	1	6.212963	-7.094906	2.557005	1	6.365108	-6.925397	2.657279
1	5.641475	-6.487956	1.267408	1	5.640907	-6.494185	1.290894	1	5.791698	-6.347874	1.381028
8	10.380123	-0.918813	0.104058	8	10.383151	-0.914418	0.195066	8	10.406938	-0.661126	0.292921
1	9.548066	-0.578990	0.432150	1	9.547829	-0.577044	0.517334	1	9.560296	-0.342116	0.604160
1	11.020626	-0.671665	0.770535	1	11.017445	-0.669611	0.868312	1	11.028011	-0.396055	0.970805

8	4.269824	7.768669	-1.521594	8	4.277329	7.773541	-1.444790	8	4.107454	7.862351	-1.472763
1	5.092190	7.374699	-1.229911	1	5.097541	7.379163	-1.147647	1	4.933950	7.490359	-1.164376
1	4.258601	8.633556	-1.110580	1	4.261459	8.636519	-1.029933	1	4.066132	8.727588	-1.064415
8	6.732211	6.663188	-0.008143	8	6.727519	6.663900	0.085319	8	6.568059	6.824098	0.090381
1	6.033669	6.514027	0.628858	1	6.023544	6.511027	0.715421	1	5.861529	6.658424	0.714359
1	7.327157	7.274328	0.426927	1	7.317878	7.273706	0.528433	1	7.138662	7.451343	0.535031
8	-5.142327	6.342877	-3.112639	8	-5.118707	6.344457	-3.125607	8	-5.232766	6.190946	-3.239006
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8	0.988334	-0.054160	-6.290670	8	1.047301	-0.031001	-6.278521	8	1.120043	-0.053163	-6.282017
1	1.763541	-0.609973	-6.368489	1	1.823814	-0.585577	-6.352020	1	1.910634	-0.588993	-6.343518
1	1.183264	0.527143	-5.555349	1	1.235038	0.547139	-5.538848	1	1.285860	0.534627	-5.544714
8	0.846187	-8.732717	-1.212370	8	0.870371	-8.732942	-1.241496	8	1.104030	-8.721028	-1.183531
1	0.045314	-9.021876	-0.775636	1	0.066003	-9.025006	-0.813197	1	0.302651	-9.029738	-0.761348
1	0.868538	-9.234268	-2.027126	1	0.900515	-9.230720	-2.058311	1	1.154851	-9.223671	-1.996331
8	7.028780	5.339173	-2.554583	8	7.048152	5.351927	-2.464436	8	6.947229	5.502423	-2.446297
1	7.049705	4.398919	-2.377548	1	7.068608	4.410894	-2.291533	1	6.988937	4.563422	-2.266314
1	7.313613	5.744095	-1.735986	1	7.325258	5.753407	-1.641504	1	7.205845	5.916395	-1.623536
8	6.672391	-0.769732	-5.194853	8	6.722272	-0.745188	-5.135720	8	6.798624	-0.619575	-5.076091
1	6.826807	-0.338803	-4.354355	1	6.868743	-0.317949	-4.291923	1	6.925804	-0.182917	-4.233990
1	5.808793	-0.457925	-5.468012	1	5.860761	-0.433104	-5.415082	1	5.932675	-0.330739	-5.366517
8	5.463200	-0.388796	3.517467	8	5.435607	-0.405627	3.567209	8	5.413627	-0.250273	3.610519
1	5.115251	-1.265097	3.357732	1	5.090109	-1.281577	3.400386	1	5.091448	-1.135606	3.446587
1	5.135885	0.136414	2.787656	1	5.114148	0.122559	2.836943	1	5.086932	0.264681	2.873161
8	3.815630	-6.092631	1.142764	8	3.815775	-6.100351	1.151905	8	3.959008	-6.000005	1.220518
1	3.355757	-5.666220	0.418991	1	3.361826	-5.671140	0.426050	1	3.502249	-5.587217	0.486941
1	3.624768	-7.023911	1.032893	1	3.626981	-7.031331	1.036082	1	3.794295	-6.936139	1.109586
8	6.455138	-1.625625	5.793358	8	6.408816	-1.651774	5.846100	8	6.393335	-1.455999	5.908291
1	7.361420	-1.358908	5.639545	1	7.316111	-1.383332	5.701540	1	7.295234	-1.166368	5.771050
1	5.943763	-1.106990	5.171711	1	5.902355	-1.130867	5.222334	1	5.880774	-0.952115	5.275589
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1	-1.141076	2.803017	7.308866	1	-1.205678	2.761292	7.314581	1	-1.341855	2.778862	7.266560
1	-1.249177	3.978525	8.256517	1	-1.323531	3.932314	8.266614	1	-1.498255	3.953330	8.208745
8	4.678493	3.812476	-7.000321	8	4.739073	3.843011	-6.937754	8	4.722440	3.905656	-6.931818
1	4.908480	4.281862	-6.198762	1	4.961411	4.308971	-6.132049	1	4.924907	4.382618	-6.127313
1	4.660262	4.489527	-7.677074	1	4.726039	4.523142	-7.611532	1	4.699750	4.580484	-7.610652
8	2.397451	1.280720	2.863970	8	2.051462	1.253999	2.962694	8	1.886602	1.419678	2.885867
1	3.254520	1.255309	2.308716	1	2.583098	1.075666	2.134063	1	2.408372	1.269127	2.080142
1	1.707783	1.439778	2.200667	1	1.133592	1.271572	2.644573	1	0.951216	1.348313	2.573949
8	-0.890855	2.483318	5.546971	8	-0.939506	2.449970	5.553524	8	-1.049843	2.461745	5.510639
1	-1.329013	1.920949	4.908230	1	-1.371338	1.890046	4.908358	1	-1.461096	1.886834	4.865208
1	-0.643627	3.262824	5.049886	1	-0.688800	3.232029	5.062223	1	-0.813281	3.246240	5.016217
8	4.231864	2.792037	4.282458	8	4.193835	2.770270	4.335835	8	4.086489	2.899496	4.343158
1	3.757409	3.623428	4.296401	1	3.718305	3.601052	4.349387	1	3.590631	3.718415	4.345771
1	3.546895	2.127149	4.210623	1	3.510306	2.104946	4.254894	1	3.420345	2.217019	4.260107
8	-9.282968	-5.055976	-0.045052	8	-9.273004	-5.073025	-0.147055	8	-9.136803	-5.303860	-0.219605
1	-9.231175	-4.181851	0.340499	1	-9.225645	-4.200622	0.242941	1	-9.114891	-4.427824	0.164462
1	-9.898287	-4.961058	-0.773078	1	-9.881969	-4.975459	-0.880057	1	-9.740323	-5.226470	-0.959486
8	-7.921777	-2.232025	-2.769048	8	-7.891067	-2.235062	-2.845927	8	-7.796836	-2.451926	-2.924905
1	-7.764272	-2.873246	-3.461962	1	-7.726689	-2.872916	-3.540350	1	-7.609669	-3.090437	-3.612928
1	-7.356126	-2.511560	-2.049250	1	-7.331480	-2.517260	-2.122438	1	-7.238054	-2.715169	-2.193691
8	-0.290345	-1.587016	2.214924	8	-0.316724	-1.584596	2.247689	8	-0.234552	-1.624810	2.111455
1	0.129794	-1.668343	1.340852	1	0.161616	-1.622189	1.402213	1	-0.005182	-1.660540	1.168559
1	-0.529058	-0.639891	2.217701	1	-0.592117	-0.644390	2.236092	1	-0.480383	-0.662461	2.179946
8	-6.008485	3.960680	0.812464	8	-6.016771	3.943285	0.780718	8	-6.112285	3.796080	0.675402
1	-5.089288	3.955511	1.081235	1	-5.099983	3.937918	1.057590	1	-5.198568	3.815201	0.961660
1	-6.354361	3.124383	1.125731	1	-6.364428	3.105170	1.087077	1	-6.442468	2.951859	0.984316
8	-2.409946	-6.416838	-3.292364	8	-2.369937	-6.411209	-3.339599	8	-2.170207	-6.494507	-3.331567
1	-3.305956	-6.736107	-3.189573	1	-3.266447	-6.731957	-3.246207	1	-3.059511	-6.836524	-3.244996
1	-2.423758	-5.538513	-2.913982	1	-2.388122	-5.534647	-2.957334	1	-2.213836	-5.615979	-2.955930
8	1.398880	-3.521399	3.244514	8	1.377523	-3.541525	3.243938	8	1.437177	-3.487161	3.268748
1	0.966522	-2.679575	3.099321	1	0.945483	-2.699531	3.098782	1	0.986168	-2.657086	3.113029
1	0.870590	-4.149518	2.751388	1	0.854351	-4.167967	2.743281	1	0.934744	-4.129792	2.767369
8	8.549819	-1.960053	-2.254865	8	8.575006	-1.946878	-2.184713	8	8.649469	-1.754495	-2.097592
1	9.097662	-2.111229	-3.025373	1	9.129821	-2.093896	-2.951026	1	9.215655	-1.893243	-2.857100
1	8.346609	-2.837907	-1.930606	1	8.369961	-2.826441	-1.866291	1	8.462738	-2.636561	-1.774856
8	-1.522773	-2.787258	-6.529084	8	-1.458405	-2.765806	-6.551675	8	-1.314927	-2.850583	-6.560745
1	-1.079906	-1.956828	-6.352731	1	-1.018085	-1.935695	-6.367605	1	-0.897016	-2.008622	-6.378264

1	-2.451710	-2.592663	-6.407890	1	-2.388604	-2.572818	-6.437818	1	-2.250709	-2.679714	-6.457815
8	4.504253	-3.522865	2.241268	8	4.491650	-3.534882	2.268224	8	4.560180	-3.410880	2.324885
1	4.553467	-4.443954	1.985588	1	4.544200	-4.454731	2.008772	1	4.637946	-4.330969	2.072721
1	3.713692	-3.465196	2.779200	1	3.696294	-3.480575	2.799395	1	3.758254	-3.372385	2.847489
8	2.328536	3.293154	7.585983	8	2.260772	3.254065	7.624644	8	2.108070	3.358856	7.608415
1	1.486187	2.905988	7.345867	1	1.421033	2.867055	7.375309	1	1.280703	2.949574	7.353350
1	2.473786	3.010199	8.487908	1	2.398368	2.967135	8.526513	1	2.243273	3.081772	8.513718
8	1.535050	-4.203981	-6.919997	8	1.604411	-4.177270	-6.921991	8	1.785237	-4.188929	-6.889408
1	0.790645	-4.045420	-6.339821	1	0.854717	-4.022214	-6.347707	1	1.026040	-4.048291	-6.323964
1	2.070337	-3.415168	-6.844049	1	2.138082	-3.388210	-6.837693	1	2.298509	-3.386416	-6.805436
8	-5.526891	-0.371238	-4.390739	8	-5.484103	-0.364148	-4.437811	8	-5.420018	-0.533715	-4.505757
1	-5.383989	0.569409	-4.499316	1	-5.341346	0.577148	-4.540808	1	-5.299304	0.410055	-4.614174
1	-6.225339	-0.432912	-3.738186	1	-6.188225	-0.429605	-3.791756	1	-6.129002	-0.611891	-3.866469
8	4.331584	-4.790792	-5.644605	8	4.390235	-4.766777	-5.624596	8	4.571032	-4.700615	-5.559335
1	4.968849	-4.699416	-4.936541	1	5.021104	-4.677935	-4.910507	1	5.192077	-4.591254	-4.839505
1	3.640728	-5.340079	-5.274745	1	3.696777	-5.318535	-5.263386	1	3.887584	-5.266684	-5.201203
8	6.693482	2.591733	3.678115	8	6.660937	2.575519	3.752396	8	6.563554	2.761320	3.786400
1	6.903258	1.659500	3.734695	1	6.871293	1.643273	3.806558	1	6.796114	1.834931	3.849529
1	5.757572	2.638668	3.872301	1	5.723291	2.620506	3.938502	1	5.623203	2.784563	3.962581
8	7.356188	-3.406226	1.389180	8	7.350874	-3.411115	1.441959	8	7.423948	-3.222721	1.526997
1	6.560842	-3.051509	1.784119	1	6.551651	-3.059113	1.831463	1	6.612335	-2.887724	1.905728
1	8.030669	-3.283447	2.057828	1	8.019269	-3.290647	2.117106	1	8.082136	-3.081097	2.208040
8	-6.290357	-5.169534	0.569807	8	-6.285819	-5.186030	0.493745	8	-6.154569	-5.338889	0.452496
1	-6.816285	-5.897999	0.239947	1	-6.807957	-5.913565	0.155907	1	-6.655184	-6.081405	0.114672
1	-5.770522	-5.549778	1.278116	1	-5.771827	-5.568937	1.204878	1	-5.638769	-5.704016	1.171627
8	5.273703	2.692938	6.919849	8	5.212416	2.660235	6.981864	8	5.079900	2.833220	7.000192
1	4.320207	2.670083	6.994136	1	4.258328	2.635964	7.047602	1	4.126061	2.785974	7.056353
1	5.437678	2.883951	5.995766	1	5.384337	2.855674	6.060153	1	5.256553	3.026310	6.078880
8	4.359019	2.292240	-0.740275	8	4.384983	2.455579	-1.350584	8	4.259048	2.787802	-1.304357
1	3.730371	1.752833	-1.243872	1	3.780034	2.255554	-2.078497	1	3.708332	3.469527	-0.866658
1	4.516476	1.776475	0.138139	1	4.187413	1.745857	-0.678771	1	3.698017	2.350904	-1.970561
8	-5.618723	2.795214	-5.226450	8	-5.572238	2.806002	-5.259785	8	-5.577253	2.627427	-5.351761
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8	7.437545	0.440551	-2.795248	8	7.464753	0.454925	-2.723916	8	7.486365	0.615428	-2.665671
1	7.910461	-0.371452	-2.612180	1	7.936979	-0.357375	-2.540391	1	7.976419	-0.183705	-2.471392
1	8.034876	0.947474	-3.345235	1	8.066333	0.965043	-3.266265	1	8.080871	1.136333	-3.205562
8	-4.511351	-2.827902	-4.770705	8	-4.462372	-2.817894	-4.820025	8	-4.334555	-2.964248	-4.859547
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8	-4.859868	4.145253	-1.727793	8	-4.845943	4.140817	-1.748398	8	-4.920421	4.004458	-1.842996
1	-4.923957	4.993886	-2.164882	1	-4.907153	4.991375	-2.182145	1	-4.997941	4.850169	-2.283557
1	-5.324193	4.265525	-0.899400	1	-5.317718	4.256760	-0.923606	1	-5.403443	4.114594	-1.023938
8	-2.056086	-3.539737	2.473633	8	-2.070463	-3.560218	2.442426	8	-2.000798	-3.596248	2.432203
1	-2.903882	-3.232070	2.153079	1	-2.915750	-3.252040	2.115793	1	-2.849941	-3.311251	2.094704
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1	-2.488264	-4.552217	-6.282184	1	-2.423979	-4.532968	-6.321420	1	-2.239254	-4.639271	-6.327446
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8	2.212518	1.664520	-4.352928	8	2.258942	1.671676	-4.250603	8	2.279871	1.721486	-4.289177
1	1.902539	2.596588	-4.349975	1	1.891958	2.582439	-4.261977	1	1.840928	2.600310	-4.295387
1	2.170819	1.340886	-3.427918	1	2.135233	1.312106	-3.344161	1	2.135648	1.317327	-3.408918
8	-7.334679	6.143377	2.437950	8	-7.359844	6.116998	2.404385	8	-7.525021	5.947543	2.269313
1	-6.611361	6.708053	2.712483	1	-6.639643	6.681222	2.687895	1	-6.821846	6.531285	2.556032
1	-6.987214	5.656002	1.691351	1	-7.005218	5.633449	1.658665	1	-7.150920	5.467601	1.530813
8	4.233755	6.286270	1.456949	8	4.216641	6.277440	1.526494	8	4.052558	6.386236	1.508612
1	4.186775	6.074532	2.389033	1	4.161665	6.061371	2.457145	1	3.993221	6.175460	2.440209
1	3.320707	6.388942	1.187086	1	3.305897	6.380321	1.249032	1	3.142501	6.464741	1.221113
8	2.078021	-2.238806	-2.846915	8	2.152172	-2.128268	-2.786289	8	2.247530	-2.196917	-2.836006
1	2.198781	-1.356576	-2.439215	1	2.253118	-1.250367	-2.358212	1	2.407709	-1.305674	-2.458825
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1	1.761812	4.892914	-4.329190	1	1.797614	4.907882	-4.287624	1	1.728384	4.916608	-4.319745
1	0.446407	4.536414	-4.986737	1	0.488496	4.552922	-4.958417	1	0.435399	4.524853	-5.001266
8	-7.222982	-4.625204	-4.188233	8	-7.176948	-4.620909	-4.269821	8	-7.009710	-4.829500	-4.323935
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1	4.353365	-7.369010	-1.026705	1	4.374173	-7.366147	-1.018545	1	4.570784	-7.266995	-0.934794
1	5.225312	-7.186716	-2.249822	1	5.256694	-7.177255	-2.233047	1	5.460989	-7.065055	-2.141564
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8	-9.939149	-2.515511	-0.245681	8	-9.930352	-2.532406	-0.341842	8	-9.854144	-2.781603	-0.439682
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8	0.624478	-4.955413	-4.477775	8	0.673146	-4.940935	-4.491394	8	0.847746	-4.958063	-4.462932
1	1.383634	-5.518523	-4.628795	1	1.434266	-5.502489	-4.638266	1	1.623883	-5.501766	-4.597905
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8	-5.003139	8.166072	-1.018926	8	-5.000177	8.158174	-1.022412	8	-5.180580	8.021838	-1.148036
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1	6.156958	-5.597273	-3.324271	1	6.195951	-5.581846	-3.291913	1	6.371829	-5.454563	-3.202420
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8	3.495382	5.574537	3.983335	8	3.456779	5.553281	4.042957	8	3.284550	5.661415	4.022410
1	2.621206	5.606150	4.370366	1	2.579177	5.582131	4.422375	1	2.402607	5.671367	4.392620
1	4.045711	6.068484	4.591326	1	4.001130	6.045051	4.658052	1	3.810265	6.170746	4.639421
8	3.509446	0.819941	-8.571244	8	3.587467	0.856405	-8.532659	8	3.660998	0.880458	-8.516513
1	4.311159	0.641043	-8.080618	1	4.385016	0.676160	-8.035780	1	4.457516	0.723383	-8.010205
1	2.970091	1.333603	-7.970235	1	3.042216	1.366694	-7.934101	1	3.097216	1.381409	-7.927307
8	2.868935	-6.956409	-4.223850	8	2.917605	-6.940544	-4.226781	8	3.137654	-6.899989	-4.160774
1	3.554035	-6.862461	-3.561296	1	3.596706	-6.848866	-3.557765	1	3.807314	-6.786926	-3.485542
1	3.270956	-7.489850	-4.909036	1	3.326295	-7.470379	-4.910818	1	3.566291	-7.424438	-4.836705
8	1.652245	-6.928253	3.146364	8	1.635727	-6.947604	3.132425	8	1.779903	-6.886569	3.184803
1	0.718885	-6.982073	2.942928	1	0.704267	-7.001542	2.920491	1	0.852298	-6.964877	2.963762
1	2.026976	-6.429999	2.420376	1	2.016283	-6.445599	2.412073	1	2.155513	-6.380464	2.464724
8	-4.936674	-3.152173	7.822209	8	-4.998708	-3.200469	7.767013	8	-4.992170	-3.270971	7.723815
1	-4.946674	-2.744288	6.956788	1	-5.001528	-2.788625	6.903415	1	-4.996102	-2.865431	6.857243
1	-4.676530	-4.058577	7.657304	1	-4.736057	-4.105812	7.600266	1	-4.705696	-4.170740	7.566389
8	-9.401286	4.387997	1.121316	8	-9.412669	4.365353	1.061480	8	-9.520240	4.136536	0.918352
1	-8.900694	3.573029	1.156933	1	-8.911461	3.550795	1.097792	1	-8.999629	3.334818	0.965743
1	-10.247819	4.166482	1.510461	1	-10.262353	4.141099	1.442097	1	-10.368084	3.894161	1.291898
8	-5.374316	-6.711545	2.482939	8	-5.384939	-6.735776	2.407826	8	-5.235933	-6.852469	2.386970
1	-5.068372	-6.337754	3.309353	1	-5.086755	-6.365440	3.238619	1	-4.955565	-6.469057	3.218035
1	-5.035853	-7.607011	2.484950	1	-5.045460	-7.630860	2.408730	1	-4.874653	-7.738910	2.397892
8	-5.180280	-2.254228	5.223471	8	-5.220363	-2.290875	5.170362	8	-5.209041	-2.385463	5.118449
1	-5.972175	-2.237803	4.685628	1	-6.007487	-2.272874	4.625611	1	-5.990664	-2.390660	4.565566
1	-4.776759	-1.397653	5.079601	1	-4.816586	-1.433194	5.033996	1	-4.825004	-1.519102	4.979945
8	-1.243736	7.266152	-1.500031	8	-1.235616	7.264713	-1.474337	8	-1.390763	7.217996	-1.554920
1	-1.223373	6.683799	-0.741298	1	-1.221286	6.678905	-0.718130	1	-1.369946	6.638073	-0.794339
1	-1.315170	6.677533	-2.251887	1	-1.299708	6.679472	-2.229485	1	-1.432643	6.626037	-2.306381
8	-1.686474	-8.769086	0.323783	8	-1.675737	-8.779220	0.271995	8	-1.455775	-8.819172	0.304162
1	-2.265150	-8.015157	0.211479	1	-2.254277	-8.025437	0.158028	1	-2.051394	-8.080659	0.178777
1	-1.722494	-8.962406	1.259702	1	-1.719810	-8.976877	1.206663	1	-1.504705	-9.011246	1.239752
8	5.205490	-0.554654	-1.693726	8	5.224204	-0.547844	-1.646767	8	5.259983	-0.434468	-1.604166
1	4.331277	-0.281337	-1.969695	1	4.352149	-0.274248	-1.929209	1	4.384469	-0.184388	-1.897498
1	5.801066	-0.001414	-2.198571	1	5.823576	0.008381	-2.143780	1	5.850681	0.132794	-2.099084
8	0.137390	-4.701864	1.043679	8	0.136934	-4.713293	1.026636	8	0.248786	-4.704697	1.047518
1	0.117717	-4.829989	0.095391	1	0.125800	-4.837084	0.077633	1	0.250555	-4.835424	0.099382
1	-0.764187	-4.476432	1.273903	1	-0.766908	-4.489937	1.249901	1	-0.662529	-4.502050	1.259895

CHEMICAL REACTION: Nucleophilic attack of H_3O^+ on the phosphodiester P–O bond

TOTAL GIBBS FREE ENERGY (a.u.)		
REACTIVE COMPLEX	TRANSITION STATE	PRODUCT COMPLEX
−2207.541249	−2207.509512	−2207.562311
	NImag = 1, −375 cm^{-1}	

GEOMETRIES											
REACTIVE COMPLEX				TRANSITION STATE				PRODUCT COMPLEX			
15	1.723306	0.429946	-0.467777	15	1.841034	0.303703	-0.454472	15	2.194141	0.375086	-0.295211
15	-1.116179	0.784620	-0.057542	15	-0.974966	0.770833	0.388504	15	-0.815992	0.916295	-0.005107
8	1.570581	-1.049911	0.072664	8	1.569366	-1.148466	0.112476	8	1.617278	-1.071986	0.068444
8	-2.168977	-0.048461	-0.872354	8	-1.879240	0.100205	-0.826258	8	-1.966282	0.080036	-0.713026
8	0.162512	0.599378	-0.977869	8	0.303833	0.755137	-0.632118	8	0.422492	0.676040	-0.876522
8	1.950727	1.444290	0.628166	8	2.416234	1.217936	0.667354	8	1.818418	1.571728	0.742853
8	-0.959243	-0.010888	1.298492	8	-1.321719	-0.439443	1.404550	8	-0.723693	0.208170	1.436496
8	2.588657	0.525480	-1.704710	8	2.572168	0.350066	-1.751821	8	2.696824	0.606726	-1.726989
8	-1.452195	2.234188	0.151579	8	-1.591720	2.158219	0.521549	8	-1.207620	2.378252	0.184432
6	2.683742	-1.789372	0.603633	6	2.679024	-1.948543	0.554147	6	2.431237	-2.113623	0.609433
6	-3.562560	-0.107292	-0.482219	6	-3.288043	-0.083438	-0.619285	6	-3.333232	0.186130	-0.277424
1	3.050935	-1.304050	1.509581	1	3.115170	-1.487931	1.441206	1	2.698051	-1.866649	1.636294
1	2.297799	-2.782066	0.822143	1	2.268551	-2.930429	0.771618	1	1.819247	-3.009944	0.574828
1	-3.907315	0.886522	-0.186886	1	-3.745707	0.853165	-0.285351	1	-3.604978	1.235540	-0.134762
1	-3.675095	-0.829236	0.326499	1	-3.460747	-0.880963	0.105664	1	-3.471882	-0.379454	0.646516
1	3.487007	-1.861123	-0.131656	1	3.436197	-2.032189	-0.226836	1	3.336184	-2.271652	0.022252
1	-4.097108	-0.433656	-1.371144	1	-3.708001	-0.361372	-1.585307	1	-3.936494	-0.238855	-1.077114
1	-0.278477	0.287023	1.968503	1	-0.754770	-0.404816	2.202811	1	0.020166	0.490550	2.025149
8	6.979558	2.822806	-1.271752	8	6.994865	2.795324	-1.217909	8	6.986634	2.768216	-1.270006
1	7.412081	2.128196	-1.768288	1	7.429069	2.098158	-1.709372	1	7.415090	2.071003	-1.766419
1	6.044399	2.650745	-1.383099	1	6.060069	2.626902	-1.337548	1	6.050479	2.602599	-1.382726
8	6.447679	-3.450735	-1.241518	8	6.437043	-3.475938	-1.182721	8	6.412018	-3.501576	-1.244648
1	5.979636	-2.617829	-1.290118	1	5.972879	-2.641208	-1.236909	1	5.949723	-2.665471	-1.293325
1	6.505944	-3.638936	-0.304843	1	6.485959	-3.662872	-0.245258	1	6.467736	-3.690781	-0.308020
8	-3.434665	2.861970	-7.002735	8	-3.366207	2.867795	-7.044112	8	-3.419326	2.882034	-7.014985
1	-3.539313	2.448069	-7.858863	1	-3.464706	2.452953	-7.900515	1	-3.525630	2.469414	-7.871527
1	-2.706447	3.472617	-7.119066	1	-2.634458	3.475278	-7.154725	1	-2.686810	3.487784	-7.129931
8	1.627716	-1.930636	8.347811	8	1.535759	-1.920802	8.359655	8	1.589561	-1.954966	8.339185
1	1.717956	-2.370384	7.503510	1	1.631921	-2.362267	7.516907	1	1.677945	-2.394766	7.494716
1	1.043804	-2.497615	8.851607	1	0.944944	-2.484583	8.858967	1	1.001123	-2.518286	8.841818
8	1.070602	-4.880934	7.582205	8	0.973598	-4.870025	7.593601	8	1.013410	-4.900902	7.570875
1	0.147483	-4.649616	7.476126	1	0.052444	-4.635112	7.478707	1	0.092031	-4.663233	7.463704
1	1.523638	-4.372814	6.909365	1	1.434855	-4.364838	6.924144	1	1.470803	-4.395435	6.898982
8	-1.317210	-3.802621	5.436214	8	-1.390029	-3.785418	5.424138	8	-1.364103	-3.804951	5.422383
1	-1.737923	-3.400182	4.676104	1	-1.802115	-3.382487	4.659574	1	-1.781040	-3.399161	4.661975
1	-1.672494	-4.691249	5.463843	1	-1.749188	-4.672545	5.449902	1	-1.725466	-4.691158	5.448944
8	-8.306181	-6.575196	-2.871740	8	-8.313947	-6.542771	-2.943142	8	-8.360552	-6.524445	-2.896813
1	-7.753574	-5.881602	-3.231001	1	-7.755238	-5.852016	-3.298412	1	-7.802752	-5.834394	-3.254871
1	-9.199517	-6.304878	-3.086801	1	-9.204162	-6.269155	-3.166800	1	-9.251736	-6.247908	-3.112899
8	-0.048777	6.312724	6.766132	8	-0.092407	6.326785	6.749773	8	-0.028635	6.300650	6.760716
1	0.186752	5.789219	6.000975	1	0.147973	5.801096	5.987626	1	0.204359	5.776054	5.995529
1	-1.003749	6.369999	6.732687	1	-1.046789	6.387905	6.707489	1	-0.983149	6.364448	6.726022
8	2.517554	4.089149	0.611753	8	2.510548	4.023005	0.641716	8	3.114924	3.897338	0.740742
1	3.334448	4.556365	0.861006	1	3.253321	4.583702	0.925665	1	3.726110	4.599254	1.043398
1	2.731183	3.136027	0.535251	1	2.917862	3.249687	0.198070	1	3.506208	3.564622	-0.101812
8	-0.999062	-2.346442	-2.026602	8	-0.997612	-2.342524	-2.037722	8	-1.025964	-2.346093	-2.039029
1	-1.410739	-1.594493	-1.600399	1	-1.410091	-1.588217	-1.616488	1	-1.433087	-1.591639	-1.612884
1	-0.069463	-2.120445	-2.065477	1	-0.066779	-2.120384	-2.068436	1	-0.094795	-2.126406	-2.076502
8	7.533654	5.186909	3.579608	8	7.514205	5.164923	3.634613	8	7.550256	5.125319	3.583662
1	7.158907	4.311123	3.675635	1	7.135011	4.290830	3.728577	1	7.169426	4.252043	3.678603
1	7.114054	5.702885	4.268612	1	7.090431	5.683712	4.318936	1	7.133248	5.643689	4.272442
8	-3.890010	1.929982	-2.861334	8	-3.863258	1.944320	-2.905604	8	-3.886601	1.950460	-2.874820
1	-4.046229	2.748051	-2.390090	1	-4.020434	2.763773	-2.437092	1	-4.037883	2.769265	-2.403244
1	-2.938386	1.879000	-2.945729	1	-2.911119	1.889319	-2.981197	1	-2.935231	1.893056	-2.957967
8	-4.995952	3.337748	4.901385	8	-5.034446	3.369037	4.844443	8	-4.993423	3.360646	4.887335
1	-4.763799	2.454903	5.190258	1	-4.808565	2.485717	5.136814	1	-4.767676	2.476054	5.175935
1	-5.850653	3.502884	5.300971	1	-5.892086	3.538301	5.235924	1	-5.847520	3.531338	5.285878

8	-1.053924	6.489703	1.115741	8	-1.045050	6.498800	1.090140	8	-1.024915	6.488164	1.109095
1	-1.309203	6.679101	2.018316	1	-1.307803	6.690687	1.990038	1	-1.280120	6.678705	2.011451
1	-0.826320	5.560473	1.120443	1	-0.821308	5.568658	1.098382	1	-0.803650	5.557402	1.113488
8	2.615600	6.000576	-2.978726	8	2.659771	5.988134	-2.969766	8	2.646722	5.976741	-2.980749
1	3.305650	6.411981	-2.457940	1	3.346705	6.397556	-2.443326	1	3.338853	6.383097	-2.458761
1	1.983624	5.684240	-2.333337	1	2.020620	5.675416	-2.329698	1	2.011737	5.664293	-2.336421
8	-0.664692	-0.212952	-8.253861	8	-0.597512	-0.220407	-8.264990	8	-0.668661	-0.210858	-8.264416
1	-0.090687	-0.032943	-7.508783	1	-0.029619	-0.041548	-7.514970	1	-0.094452	-0.035249	-7.518448
1	-0.235102	-0.932164	-8.717122	1	-0.166647	-0.942109	-8.723170	1	-0.243352	-0.932674	-8.727575
8	3.284225	-8.641997	0.290365	8	3.238464	-8.651782	0.328247	8	3.211231	-8.672179	0.279530
1	3.634990	-9.505447	0.075358	1	3.587641	-9.516999	0.117817	1	3.556398	-9.537856	0.064424
1	2.522191	-8.543371	-0.281251	1	2.482104	-8.550965	-0.250480	1	2.450659	-8.567993	-0.293047
8	1.625904	7.739174	1.382877	8	1.637316	7.737752	1.379858	8	1.662992	7.719186	1.380668
1	0.889969	7.195894	1.664194	1	0.896616	7.197932	1.655272	1	0.922997	7.180745	1.660633
1	1.222694	8.557710	1.092902	1	1.240133	8.557460	1.084919	1	1.265756	8.540636	1.090692
8	-2.138995	4.241289	-1.663134	8	-2.056380	4.010149	-1.573834	8	-2.118248	4.260528	-1.638647
1	-1.945147	3.438272	-1.142757	1	-1.937355	3.231643	-0.991984	1	-1.887631	3.475509	-1.100114
1	-3.114123	4.328611	-1.651984	1	-3.012321	4.212447	-1.543079	1	-3.095645	4.315630	-1.630160
8	-1.398185	-6.881752	3.720175	8	-1.467903	-6.866942	3.712254	8	-1.463718	-6.882337	3.704196
1	-1.645604	-6.242074	3.052411	1	-1.706576	-6.227332	3.041250	1	-1.705875	-6.240553	3.036523
1	-1.848409	-7.685970	3.459058	1	-1.919005	-7.669736	3.448284	1	-1.919054	-7.683299	3.441939
8	3.066590	-2.224110	-5.490741	8	3.100050	-2.242342	-5.464658	8	3.045104	-2.249181	-5.497607
1	2.963700	-2.023856	-4.560789	1	2.989471	-2.040179	-4.536000	1	2.942324	-2.048839	-4.567662
1	3.509614	-3.072726	-5.505727	1	3.539712	-3.092781	-5.474254	1	3.482362	-3.100784	-5.512559
8	-1.072189	-2.941031	8.013322	8	-1.165087	-2.920703	8.002030	8	-1.116706	-2.946734	8.000390
1	-1.385917	-3.209872	7.149373	1	-1.471989	-3.189650	7.135664	1	-1.431089	-3.212869	7.135841
1	-0.997916	-1.987936	7.955312	1	-1.086383	-1.968014	7.943208	1	-1.035867	-1.994131	7.943113
8	0.083187	3.931273	1.843917	8	-0.016253	4.031591	1.754227	8	0.502628	3.759487	1.904729
1	-0.346749	3.231370	1.316662	1	-0.556693	3.426371	1.199285	1	-0.048515	3.228026	1.284414
1	0.986312	4.032682	1.465798	1	0.892577	4.024643	1.379611	1	1.380158	3.843044	1.472645
8	-2.764013	5.298076	4.095794	8	-2.787215	5.318944	4.056264	8	-2.747104	5.306260	4.086050
1	-3.269606	4.486209	4.107397	1	-3.296214	4.509167	4.064506	1	-3.258229	4.497847	4.096434
1	-3.374136	5.965698	4.410395	1	-3.397453	5.989556	4.364215	1	-3.353093	5.977813	4.400272
8	-2.673917	-0.004283	-5.504049	8	-2.630955	0.000872	-5.534033	8	-2.680134	0.009689	-5.517177
1	-3.285774	0.489897	-4.957707	1	-3.245760	0.498418	-4.994094	1	-3.289349	0.507665	-4.971332
1	-2.445331	0.598227	-6.212319	1	-2.393430	0.601305	-6.241121	1	-2.446493	0.611092	-6.224738
8	0.739617	4.711757	-1.590992	8	0.765897	4.709210	-1.597259	8	0.760136	4.699818	-1.596399
1	-0.083772	4.224446	-1.598745	1	-0.059373	4.225253	-1.611793	1	-0.066540	4.218129	-1.605584
1	1.128756	4.513680	-0.739606	1	1.146413	4.510912	-0.742037	1	1.146767	4.498538	-0.744621
8	0.472587	5.017506	4.374572	8	0.445522	5.025614	4.365121	8	0.487132	5.003477	4.369002
1	-0.074374	5.774071	4.163606	1	-0.096381	5.784068	4.147969	1	-0.054380	5.763887	4.157801
1	0.476247	4.492980	3.573893	1	0.454361	4.499795	3.565332	1	0.488302	4.479461	3.567980
8	2.729135	-0.684252	4.593743	8	2.676597	-0.684945	4.613886	8	2.704512	-0.713656	4.587431
1	2.328273	-0.061083	3.987977	1	2.283853	-0.061118	4.003499	1	2.308722	-0.087375	3.981541
1	3.661844	-0.471031	4.575389	1	3.610301	-0.475563	4.603744	1	3.638674	-0.506778	4.570476
8	-7.997244	1.153005	4.212235	8	-8.038227	1.195458	4.131251	8	-8.008585	1.196842	4.192694
1	-8.757592	0.597840	4.382986	1	-8.802371	0.643675	4.295898	1	-8.772926	0.646754	4.362052
1	-7.799570	1.556139	5.057598	1	-7.846650	1.599137	4.977756	1	-7.809314	1.598066	5.038590
8	4.315217	8.536646	3.002872	8	4.314928	8.526841	3.023170	8	4.355480	8.497268	3.004813
1	3.982701	8.029016	2.261760	1	3.987136	8.019382	2.279839	1	4.020517	7.992397	2.262917
1	5.232966	8.701349	2.786120	1	5.235293	8.687446	2.814577	1	5.274622	8.655860	2.789407
8	8.018000	0.610722	0.522484	8	8.007770	0.581901	0.589229	8	8.007568	0.547940	0.524160
1	7.973010	1.406397	-0.007596	1	7.970895	1.376901	0.057512	1	7.968711	1.344250	-0.005453
1	7.143216	0.528163	0.904376	1	7.129198	0.503526	0.963220	1	7.131727	0.471090	0.904818
8	6.082709	-3.933812	7.031635	8	5.994373	-3.944249	7.087489	8	6.032590	-3.987568	7.027682
1	6.195692	-3.189071	6.439619	1	6.115822	-3.200927	6.495366	1	6.151438	-3.243226	6.436314
1	6.807430	-4.520945	6.817660	1	6.718613	-4.534678	6.881081	1	6.753582	-4.579480	6.814295
8	2.125819	-3.024244	5.946900	8	2.051339	-3.020281	5.965124	8	2.083452	-3.050369	5.938222
1	2.662661	-2.235800	5.867296	1	2.592112	-2.234166	5.889207	1	2.625755	-2.265546	5.859865
1	1.722137	-3.127721	5.084919	1	1.655145	-3.123491	5.099644	1	1.680240	-3.150532	5.075631
8	-4.625085	-2.771223	1.841160	8	-4.660602	-2.746299	1.797318	8	-4.660018	-2.748705	1.823562
1	-4.790430	-1.983733	2.360096	1	-4.827464	-1.957308	2.313482	1	-4.820699	-1.960448	2.342796
1	-5.496306	-3.097568	1.616954	1	-5.531064	-3.069443	1.565652	1	-5.533137	-3.068964	1.597967
8	-1.111650	9.974826	-2.076088	8	-1.059278	9.979008	-2.107540	8	-1.054602	9.975684	-2.080498
1	-2.054622	9.871377	-1.948804	1	-2.003792	9.879612	-1.988740	1	-1.998427	9.878577	-1.954553
1	-0.739739	9.134357	-1.809205	1	-0.693272	9.137456	-1.835946	1	-0.688781	9.132530	-1.813672
8	-2.570135	1.315153	3.637852	8	-2.746766	1.438413	3.580639	8	-2.527030	1.341182	3.588972
1	-2.304648	0.564351	3.083807	1	-2.634789	0.741092	2.915845	1	-2.078939	0.739142	2.968966
1	-2.969827	1.985916	3.044178	1	-3.199231	2.173550	3.113297	1	-2.930466	2.038893	3.030281
8	-9.600020	0.060340	-2.817198	8	-9.581043	0.098068	-2.910851	8	-9.609260	0.119711	-2.839615
1	-8.841650	0.499251	-2.432373	1	-8.824437	0.534498	-2.519781	1	-8.848440	0.553196	-2.453478

1	-9.335732	-0.857093	-2.886586	1	-9.319888	-0.820544	-2.976378	1	-9.351131	-0.799455	-2.909256
8	-4.924101	-5.271026	4.738008	8	-4.996361	-5.240209	4.695218	8	-4.979961	-5.248307	4.718346
1	-4.791099	-5.383741	5.679407	1	-4.872446	-5.351957	5.637972	1	-4.849002	-5.362540	5.659848
1	-4.988977	-4.323957	4.617659	1	-5.056254	-4.293077	4.572796	1	-5.038226	-4.300740	4.598538
8	9.492837	-3.813320	-0.140622	8	9.470486	-3.849182	-0.053408	8	9.453149	-3.885606	-0.139892
1	9.693919	-2.971568	-0.548951	1	9.678744	-3.008914	-0.461194	1	9.660506	-3.044975	-0.547390
1	8.682516	-3.656601	0.344168	1	8.656409	-3.688379	0.423694	1	8.643256	-3.723691	0.343910
8	5.076437	5.680824	-4.507570	8	5.133171	5.655890	-4.475500	8	5.107390	5.641241	-4.506489
1	5.797185	5.453080	-3.919834	1	5.847570	5.426149	-3.880829	1	5.825776	5.408211	-3.917934
1	4.310561	5.736520	-3.936620	1	4.362334	5.715628	-3.911678	1	4.341140	5.701777	-3.936534
8	-6.257908	-0.696986	2.865146	8	-6.294220	-0.663774	2.803053	8	-6.280064	-0.664069	2.846723
1	-6.530187	0.164875	3.181105	1	-6.565850	0.199696	3.115154	1	-6.546898	0.199419	3.162887
1	-7.036040	-1.050334	2.435665	1	-7.069831	-1.014633	2.367013	1	-7.060003	-1.011828	2.415959
8	2.184560	2.966615	-7.337208	8	2.256228	2.948972	-7.327256	8	2.200928	2.948637	-7.341819
1	2.979987	3.498879	-7.369155	1	3.054087	3.477934	-7.352750	1	3.000003	3.475493	-7.372342
1	1.877635	3.050606	-6.433660	1	1.941391	3.035664	-6.426691	1	1.893362	3.034124	-6.438630
8	-7.346459	1.807470	-2.024858	8	-7.327695	1.837255	-2.100637	8	-7.344931	1.850937	-2.043081
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8	5.322084	-7.838897	4.228141	8	5.243460	-7.850690	4.283265	8	5.249185	-7.885548	4.220578
1	4.654573	-7.223033	4.531933	1	4.575723	-7.231622	4.579962	1	4.585473	-7.265352	4.523880
1	5.922869	-7.926212	4.968072	1	5.837083	-7.939270	5.028805	1	5.848361	-7.977436	4.961261
8	-3.368996	3.430243	1.792298	8	-3.519666	3.567946	1.808770	8	-3.284275	3.428528	1.722528
1	-2.706529	3.139350	1.136721	1	-2.843316	3.131071	1.252420	1	-2.565647	3.125013	1.125783
1	-3.024378	4.255471	2.176109	1	-3.126279	4.396315	2.132935	1	-2.988011	4.271980	2.103200
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8	-5.918458	-3.375529	-1.395357	8	-5.926755	-3.350509	-1.449960	8	-5.953099	-3.342074	-1.415094
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1	-5.917056	-4.002562	-0.671912	1	-5.934543	-3.976384	-0.725553	1	-5.956944	-3.969575	-0.692065
8	3.162685	-4.371817	-1.710472	8	3.152737	-4.384355	-1.680308	8	3.121467	-4.399964	-1.718638
1	2.321080	-4.825737	-1.758464	1	2.309755	-4.834914	-1.735294	1	2.276858	-4.848112	-1.768064
1	3.812597	-5.052149	-1.888000	1	3.801453	-5.067619	-1.850807	1	3.766972	-5.084590	-1.895741
8	-2.983277	-6.568011	-0.077671	8	-3.016859	-6.552827	-0.100440	8	-3.041504	-6.555327	-0.095573
1	-3.004806	-5.981965	-0.834938	1	-3.029054	-5.967915	-0.858790	1	-3.058019	-5.968654	-0.852481
1	-3.902937	-6.764567	0.097661	1	-3.938885	-6.745348	0.066765	1	-3.962717	-6.745731	0.078388
8	-3.379260	-3.853978	-2.506441	8	-3.379473	-3.841101	-2.536985	8	-3.415719	-3.837075	-2.523074
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1	-2.517673	-3.521418	-2.253906	1	-2.518880	-3.511654	-2.277088	1	-2.552228	-3.510553	-2.269158
8	8.430700	3.877870	0.925002	8	8.430147	3.847978	0.990391	8	8.441955	3.811940	0.929400
1	7.940983	3.852557	0.103138	1	7.947874	3.823346	0.164117	1	7.953190	3.790497	0.106860
1	7.849462	4.331864	1.536564	1	7.845198	4.305321	1.595891	1	7.862995	4.269480	1.540479
8	-1.236789	4.466525	-4.365605	8	-1.186012	4.467597	-4.389476	8	-1.214144	4.469863	-4.373833
1	-1.346649	4.500056	-3.415254	1	-1.304430	4.503100	-3.440225	1	-1.325055	4.503519	-3.423609
1	-1.400320	3.550912	-4.592552	1	-1.351206	3.552295	-4.616476	1	-1.383596	3.555531	-4.601607
8	0.920817	-5.834273	-1.731523	8	0.905184	-5.837683	-1.719604	8	0.869726	-5.847107	-1.743678
1	0.335974	-5.710679	-2.479109	1	0.327721	-5.712904	-2.472711	1	0.286749	-5.719045	-2.491969
1	0.964919	-6.783129	-1.616400	1	0.944343	-6.786526	-1.602595	1	0.907212	-6.796317	-1.629124
8	1.585919	-7.224178	5.900236	8	1.494692	-7.218046	5.920098	8	1.515036	-7.246498	5.888047
1	1.691319	-6.730038	5.086980	1	1.609554	-6.725647	5.107066	1	1.624896	-6.752555	5.075261
1	1.326356	-6.567540	6.547007	1	1.231909	-6.559319	6.563435	1	1.259077	-6.588532	6.534903
8	-0.370879	7.677301	3.645327	8	-0.380334	7.687658	3.624014	8	-0.337222	7.669429	3.640386
1	0.340196	8.115263	4.113820	1	0.328211	8.123464	4.098314	1	0.376185	8.102234	4.110125
1	-1.143935	8.209606	3.833078	1	-1.152888	8.223414	3.803838	1	-1.106889	8.206864	3.827448
8	-4.489988	0.726361	5.680292	8	-4.546334	0.756861	5.632044	8	-4.506301	0.745368	5.665190
1	-4.173307	0.961719	6.551602	1	-4.236681	0.992321	6.505848	1	-4.189204	0.977995	6.537083
1	-3.728860	0.836562	5.109986	1	-3.779570	0.863038	5.068562	1	-3.743672	0.850756	5.095983
8	4.640790	1.258446	-5.672076	8	4.690095	1.233464	-5.637019	8	4.643220	1.222694	-5.674513
1	3.939709	1.369700	-5.030354	1	3.983629	1.348609	-5.001922	1	3.942047	1.338299	-5.033662
1	4.603858	2.051246	-6.208139	1	4.661318	2.025548	-6.174639	1	4.612411	2.016077	-6.210099
8	-3.162767	8.814701	0.756946	8	-3.140980	8.831806	0.708397	8	-3.117396	8.827699	0.749001
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1	-3.978999	8.611803	0.299473	1	-3.953812	8.631510	0.243786	1	-3.934371	8.630665	0.290295
8	6.395701	-6.945472	1.576711	8	6.344954	-6.965908	1.640386	8	6.332444	-6.997721	1.571190
1	6.225332	-7.046561	2.513919	1	6.165600	-7.064798	2.576149	1	6.160123	-7.098259	2.508102
1	5.648690	-6.445195	1.250196	1	5.603018	-6.463111	1.306256	1	5.589296	-6.492156	1.244001
8	10.364680	-0.841904	0.161116	8	10.351692	-0.880867	0.251650	8	10.344790	-0.920393	0.164990
1	9.528382	-0.509014	0.485507	1	9.513832	-0.544048	0.567846	1	9.510340	-0.582029	0.488474
1	10.998930	-0.595993	0.834001	1	10.980756	-0.636469	0.929932	1	10.979789	-0.679247	0.838893
8	4.218226	7.823200	-1.447582	8	4.255766	7.806658	-1.426863	8	4.259649	7.787409	-1.446240

1	5.040619	7.431691	-1.152687	1	5.073812	7.412269	-1.123834	1	5.078960	7.390116	-1.150497
1	4.199203	8.685060	-1.030538	1	4.236453	8.669257	-1.011362	1	4.245929	8.649106	-1.028652
8	6.675624	6.720518	0.075984	8	6.694574	6.696400	0.120877	8	6.707421	6.667025	0.079904
1	5.973299	6.562975	0.706778	1	5.985863	6.542738	0.745457	1	6.003190	6.513856	0.709647
1	7.263981	7.331803	0.519722	1	7.281344	7.305989	0.569030	1	7.299326	7.274000	0.524839
8	-5.174024	6.357025	-3.117591	8	-5.126731	6.376150	-3.180547	8	-5.140099	6.386310	-3.129871
1	-5.754404	6.469231	-3.870411	1	-5.699730	6.489516	-3.938828	1	-5.718682	6.502957	-3.883399
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8	1.015067	0.016653	-6.295933	8	1.065179	0.005480	-6.292119	8	1.009974	0.006025	-6.304076
1	1.793895	-0.534319	-6.372013	1	1.842407	-0.548786	-6.360198	1	1.785136	-0.550187	-6.379473
1	1.201403	0.593760	-5.555100	1	1.247087	0.583010	-5.550514	1	1.199233	0.581365	-5.562611
8	0.884136	-8.698561	-1.280497	8	0.852644	-8.701069	-1.264445	8	0.812937	-8.711375	-1.294601
1	0.081723	-8.995231	-0.851700	1	0.045130	-8.993775	-0.842555	1	0.007943	-9.002855	-0.867082
1	0.915208	-9.194157	-2.098603	1	0.889176	-9.198100	-2.081455	1	0.841740	-9.206636	-2.112994
8	6.998084	5.416354	-2.477544	8	7.035053	5.386837	-2.427542	8	7.024446	5.362367	-2.474052
1	7.022943	4.474991	-2.307035	1	7.054494	4.445656	-2.255337	1	7.042666	4.420744	-2.304133
1	7.274690	5.816987	-1.654033	1	7.305746	5.787658	-1.602160	1	7.302661	5.760568	-1.649903
8	6.694875	-0.675431	-5.163619	8	6.731501	-0.707960	-5.106736	8	6.683404	-0.725454	-5.164571
1	6.840769	-0.249665	-4.318977	1	6.871397	-0.281441	-4.261460	1	6.831052	-0.301247	-4.319451
1	5.831573	-0.366441	-5.440876	1	5.872045	-0.395895	-5.392374	1	5.822601	-0.410413	-5.442786
8	5.420154	-0.363313	3.542096	8	5.378423	-0.376680	3.586436	8	5.399072	-0.410358	3.539623
1	5.078252	-1.240355	3.373603	1	5.034488	-1.252588	3.416193	1	5.051435	-1.284942	3.370088
1	5.095251	0.165279	2.813649	1	5.062372	0.152064	2.854217	1	5.078761	0.120910	2.811090
8	3.821635	-6.059043	1.114991	8	3.778876	-6.069723	1.153716	8	3.765098	-6.093485	1.106592
1	3.364685	-5.630018	0.390912	1	3.330337	-5.639999	0.424809	1	3.312058	-5.660884	0.382182
1	3.636753	-6.990550	0.997122	1	3.591267	-7.000655	1.035616	1	3.574037	-7.023634	0.987856
8	6.402342	-1.610870	5.816359	8	6.334630	-1.624584	5.871554	8	6.369670	-1.666062	5.814380
1	7.308224	-1.338079	5.671086	1	7.242915	-1.355725	5.734160	1	7.277582	-1.399350	5.670508
1	5.892636	-1.090635	5.194679	1	5.832773	-1.103271	5.244416	1	5.864358	-1.141961	5.192359
8	-8.363012	1.605054	1.376577	8	-8.376163	1.644448	1.291656	8	-8.367435	1.653223	1.356845
1	-8.018841	0.796893	0.995097	1	-8.031828	0.834276	0.914610	1	-8.028258	0.842987	0.975294
1	-8.225898	1.502520	2.318623	1	-8.248101	1.542864	2.235077	1	-8.232296	1.549142	2.299007
8	-1.148890	2.997394	8.233138	8	-1.219473	3.018329	8.211829	8	-1.153275	2.991929	8.224040
1	-1.229193	2.764981	7.307567	1	-1.292251	2.784762	7.285927	1	-1.233906	2.760674	7.298208
1	-1.350722	3.933088	8.262716	1	-1.417733	3.954886	8.238090	1	-1.348771	3.928957	8.253965
8	4.688761	3.908499	-6.951095	8	4.760626	3.881245	-6.919695	8	4.710961	3.873195	-6.951707
1	4.910293	4.373415	-6.144564	1	4.976668	4.346546	-6.111897	1	4.934561	4.336065	-6.144571
1	4.671702	4.590250	-7.623142	1	4.752512	4.561981	-7.592937	1	4.699450	4.555485	-7.623325
8	0.966621	0.932283	2.990426	8	0.323326	1.196428	1.829944	8	0.974438	1.294774	3.404504
1	1.466546	1.221132	2.175851	1	1.536875	1.331687	1.350545	1	0.905834	2.188261	3.002154
1	0.611216	1.739051	3.398294	1	0.039680	2.013482	2.275221	1	0.436158	1.317918	4.216015
8	-0.964373	2.459242	5.545330	8	-1.012563	2.475118	5.526672	8	-0.968792	2.454292	5.536126
1	-1.394734	1.899042	4.899421	1	-1.439285	1.915644	4.877725	1	-1.402085	1.897457	4.889266
1	-0.717862	3.243624	5.055609	1	-0.758369	3.257701	5.038003	1	-0.716286	3.237297	5.047257
8	4.165629	2.805158	4.320589	8	4.129810	2.798131	4.348439	8	4.165096	2.766070	4.318527
1	3.686475	3.633806	4.336954	1	3.653926	3.628752	4.359113	1	3.691572	3.597952	4.334796
1	3.484905	2.137040	4.239026	1	3.447130	2.132666	4.261690	1	3.479950	2.102655	4.235604
8	-9.273520	-5.086033	-0.161345	8	-9.299951	-5.045326	-0.244059	8	-9.321395	-5.030501	-0.186738
1	-9.229391	-4.214409	0.230767	1	-9.255844	-4.173262	0.147075	1	-9.271862	-4.159456	0.206011
1	-9.884038	-4.989311	-0.893166	1	-9.903342	-4.947287	-0.981593	1	-9.930250	-4.929147	-0.919317
8	-7.908228	-2.235276	-2.855199	8	-7.898390	-2.204491	-2.929756	8	-7.933087	-2.187347	-2.876860
1	-7.742120	-2.870659	-3.551471	1	-7.728521	-2.841660	-3.623480	1	-7.770366	-2.823390	-3.573327
1	-7.344292	-2.516819	-2.133277	1	-7.344244	-2.487166	-2.202278	1	-7.374056	-2.473181	-2.154368
8	-0.363104	-1.431754	3.921297	8	-0.248689	-1.379845	4.050864	8	-0.024320	-1.364968	4.428274
1	0.322420	-0.771567	4.119055	1	0.502110	-0.948961	4.495309	1	0.894282	-1.161413	4.700975
1	-0.359214	-2.039192	4.683533	1	-0.478661	-2.106121	4.661270	1	-0.292891	-2.097895	5.012840
8	-6.055503	3.942157	0.784066	8	-6.053775	3.971159	0.716648	8	-6.043270	3.974949	0.768994
1	-5.138275	3.940129	1.059520	1	-5.139123	3.965831	1.000497	1	-5.126450	3.966495	1.045681
1	-6.399001	3.101759	1.088852	1	-6.403487	3.132661	1.019591	1	-6.392893	3.136709	1.072759
8	-2.369572	-6.385856	-3.367804	8	-2.372319	-6.378458	-3.385095	8	-2.422128	-6.375204	-3.384756
1	-3.264519	-6.710773	-3.273843	1	-3.269414	-6.699568	-3.298826	1	-3.319391	-6.694081	-3.292214
1	-2.391018	-5.510341	-2.983311	1	-2.393699	-5.502247	-3.002187	1	-2.438131	-5.499815	-2.999710
8	1.375393	-3.516207	3.217169	8	1.323926	-3.513555	3.229407	8	1.333383	-3.535427	3.207158
1	0.939435	-2.675760	3.074790	1	0.892737	-2.671566	3.081724	1	0.903351	-2.691938	3.064749
1	0.854206	-4.143689	2.715743	1	0.804787	-4.139712	2.724212	1	0.808615	-4.159019	2.704614
8	8.557420	-1.876343	-2.218476	8	8.562070	-1.911737	-2.142773	8	8.533748	-1.940946	-2.217719
1	9.111693	-2.019003	-2.986005	1	9.122759	-2.057891	-2.904969	1	9.088073	-2.086876	-2.984595
1	8.356734	-2.757595	-1.901949	1	8.354887	-2.791655	-1.826722	1	8.326639	-2.821020	-1.902047
8	-1.479020	-2.728452	-6.572112	8	-1.437500	-2.729862	-6.586835	8	-1.502367	-2.721856	-6.585433
1	-1.042066	-1.896876	-6.386634	1	-0.998857	-1.899782	-6.398666	1	-1.060013	-1.893394	-6.398817
1	-2.409880	-2.539841	-6.456347	1	-2.368601	-2.537269	-6.479898	1	-2.432078	-2.526985	-6.470798

8	4.487952	-3.493428	2.236709	8	4.445398	-3.505055	2.277468	8	4.447348	-3.533200	2.230906
1	4.544143	-4.412386	1.974868	1	4.500220	-4.424654	2.017594	1	4.497636	-4.452347	1.968533
1	3.693186	-3.443949	2.769231	1	3.646000	-3.451475	2.802609	1	3.652218	-3.478658	2.762391
8	2.235533	3.272216	7.613557	8	2.171578	3.278343	7.622851	8	2.233775	3.244107	7.609201
1	1.397118	2.882143	7.364539	1	1.333888	2.891295	7.366773	1	1.393062	2.859913	7.358796
1	2.375780	2.983638	8.514493	1	2.302387	2.990638	8.525485	1	2.370835	2.953991	8.510133
8	1.589393	-4.125501	-6.950660	8	1.628504	-4.140027	-6.935068	8	1.556972	-4.139516	-6.960774
1	0.839912	-3.975182	-6.374840	1	0.874406	-3.985727	-6.366375	1	0.807753	-3.984473	-6.385866
1	2.119723	-3.334317	-6.865199	1	2.161266	-3.350878	-6.845990	1	2.092560	-3.352018	-6.874076
8	-5.511964	-0.349817	-4.446067	8	-5.479960	-0.331382	-4.501554	8	-5.521894	-0.317206	-4.463248
1	-5.373503	0.592353	-4.546921	1	-5.336725	0.610053	-4.602614	1	-5.376885	0.624066	-4.563290
1	-6.214795	-0.419985	-3.799100	1	-6.188966	-0.397642	-3.860946	1	-6.226061	-0.383011	-3.817275
8	4.379778	-4.705998	-5.659015	8	4.404548	-4.729834	-5.617006	8	4.341592	-4.739842	-5.665758
1	5.011351	-4.616172	-4.945671	1	5.029926	-4.641444	-4.898045	1	4.972798	-4.654785	-4.951503
1	3.689309	-5.261705	-5.298128	1	3.708534	-5.282139	-5.261588	1	3.646869	-5.291071	-5.306170
8	6.632660	2.622718	3.732885	8	6.601349	2.604680	3.783649	8	6.631621	2.567224	3.734027
1	6.847191	1.691275	3.784387	1	6.811585	1.672454	3.838573	1	6.839735	1.634308	3.785199
1	5.695112	2.663117	3.920541	1	5.662297	2.649206	3.962643	1	5.694115	2.613882	3.920446
8	7.345326	-3.355023	1.406380	8	7.310796	-3.379643	1.473138	8	7.306718	-3.413709	1.404520
1	6.545167	-3.007514	1.797988	1	6.508515	-3.028242	1.856853	1	6.508413	-3.061018	1.795281
1	8.014227	-3.233306	2.080804	1	7.973988	-3.259575	2.153469	1	7.975521	-3.296990	2.079924
8	-6.284882	-5.187506	0.474595	8	-6.317702	-5.157975	0.419391	8	-6.334379	-5.152737	0.453160
1	-6.804339	-5.916482	0.135731	1	-6.837015	-5.885368	0.076926	1	-6.858328	-5.877937	0.113114
1	-5.768116	-5.569927	1.183977	1	-5.809021	-5.541364	1.134075	1	-5.821187	-5.539131	1.162984
8	5.188763	2.692982	6.964771	8	5.128227	2.686021	7.002056	8	5.183867	2.645203	6.964009
1	4.234894	2.664351	7.031909	1	4.173672	2.661393	7.060496	1	4.229736	2.623023	7.029844
1	5.358402	2.891481	6.043292	1	5.307106	2.882349	6.081860	1	5.356100	2.843145	6.042891
8	4.284818	2.597553	-1.095124	8	4.216100	2.868785	-1.333778	8	4.205427	2.841009	-1.584008
1	3.684850	1.907712	-1.447635	1	4.354399	3.812609	-1.508597	1	3.696062	2.001712	-1.713507
1	3.937509	3.450993	-1.393454	1	3.758984	2.543091	-2.142013	1	4.019688	3.395533	-2.356109
8	-5.615293	2.821963	-5.259946	8	-5.562842	2.839485	-5.321315	8	-5.602528	2.855735	-5.275162
1	-4.849928	2.996703	-5.807917	1	-4.791784	3.010222	-5.862524	1	-4.835252	3.025619	-5.821985
1	-5.266636	2.778952	-4.368942	1	-5.222537	2.796482	-4.427086	1	-5.255376	2.809770	-4.383718
8	7.435796	0.521895	-2.749951	8	7.455192	0.490203	-2.688259	8	7.429195	0.465220	-2.749114
1	7.911868	-0.288777	-2.569187	1	7.926265	-0.322117	-2.501873	1	7.899493	-0.348793	-2.568246
1	8.034292	1.036010	-3.291939	1	8.060725	1.001000	-3.225546	1	8.031909	0.975601	-3.289954
8	-4.480053	-2.798080	-4.836001	8	-4.454559	-2.784455	-4.878184	8	-4.506150	-2.772182	-4.853414
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8	-4.889456	4.151166	-1.746337	8	-4.863764	4.171349	-1.803291	8	-4.872408	4.177667	-1.759697
1	-4.955070	5.002528	-2.177854	1	-4.921937	5.022279	-2.236725	1	-4.931642	5.029740	-2.190739
1	-5.360463	4.262968	-0.920535	1	-5.341850	4.286398	-0.982011	1	-5.343759	4.292134	-0.934458
8	-2.073709	-3.548054	2.420894	8	-2.117842	-3.532604	2.401619	8	-2.114777	-3.543268	2.406216
1	-2.920845	-3.242781	2.096330	1	-2.960715	-3.224398	2.068829	1	-2.959376	-3.232021	2.080715
1	-1.505042	-2.780031	2.366052	1	-1.545558	-2.766998	2.350784	1	-1.540820	-2.779100	2.352650
8	-3.162420	-5.091438	-6.148290	8	-3.134369	-5.085275	-6.174752	8	-3.202387	-5.073600	-6.165447
1	-2.436463	-4.500413	-6.344814	1	-2.404230	-4.497535	-6.365544	1	-2.472157	-4.487404	-6.360602
1	-3.182460	-5.136475	-5.192485	1	-3.163343	-5.128698	-5.219101	1	-3.224024	-5.119125	-5.209700
8	1.601123	1.735378	-4.112689	8	2.796546	2.235367	-3.742140	8	1.629529	1.695785	-4.085484
1	1.591172	2.716063	-4.245708	1	2.234284	2.969538	-4.088793	1	1.581124	2.674999	-4.190807
1	1.977235	1.510663	-3.242473	1	2.221106	1.621670	-3.254672	1	1.888442	1.449541	-3.173496
8	-7.405607	6.105874	2.415237	8	-7.409881	6.142982	2.331991	8	-7.380816	6.146741	2.399778
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8	4.168691	6.319415	1.520027	8	4.172904	6.307848	1.542520	8	4.195867	6.282058	1.520303
1	4.116103	6.100777	2.450215	1	4.110908	6.090920	2.472530	1	4.140534	6.063173	2.450274
1	3.257079	6.418985	1.244218	1	3.264270	6.410696	1.258216	1	3.285327	6.388011	1.243332
8	2.186800	-2.188913	-2.828645	8	2.145299	-2.247333	-2.855014	8	2.130641	-2.186696	-2.853507
1	2.475092	-1.363792	-2.409148	1	2.444827	-1.409320	-2.466124	1	2.325535	-1.338378	-2.423849
1	2.623743	-2.934301	-2.343528	1	2.597423	-2.977889	-2.363037	1	2.578416	-2.900188	-2.338785
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8	1.331825	4.279131	-4.831834	8	1.385976	4.268975	-4.831860	8	1.353764	4.265288	-4.836726
1	1.746743	4.953789	-4.293800	1	1.798709	4.942794	-4.291104	1	1.772539	4.936755	-4.297685
1	0.438164	4.594757	-4.963474	1	0.494856	4.588032	-4.972176	1	0.462451	4.587078	-4.969361
8	-7.185831	-4.614388	-4.286168	8	-7.172674	-4.588823	-4.350317	8	-7.224969	-4.570384	-4.308431
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1	-6.416187	-4.045849	-4.313945	1	-6.400487	-4.023475	-4.371933	1	-6.451436	-4.007080	-4.334795
8	4.444513	-6.823650	-1.877260	8	4.425983	-6.841665	-1.831503	8	4.386798	-6.860357	-1.885326
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1	5.262047	-7.121126	-2.274854	1	5.245899	-7.143112	-2.221125	1	5.202824	-7.163133	-2.282013
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1	-0.233492	1.567204	-3.829078	1	-1.123920	0.813921	-2.637770	1	-0.251370	1.558927	-3.836836
1	-1.483164	0.835278	-4.370184	1	-1.398406	0.605816	-4.150677	1	-1.500676	0.875862	-4.433327
8	5.110658	0.507115	0.824990	8	5.162530	0.377250	0.877878	8	3.697291	0.228254	0.474755
1	4.912287	1.413302	0.533922	1	4.630400	1.159730	0.663972	1	2.630892	1.914207	1.163081
1	5.219801	0.003036	-0.016909	1	5.270734	-0.080928	0.007809	1	4.375020	-0.109453	-0.154568
8	-2.347149	5.912530	-6.405768	8	-2.271714	5.914847	-6.441990	8	-2.311874	5.924727	-6.414531
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8	-9.942323	-2.547850	-0.348747	8	-9.956609	-2.504738	-0.441557	8	-9.972647	-2.487700	-0.373358
1	-9.958805	-2.194858	0.540300	1	-9.979783	-2.150257	0.446749	1	-9.987928	-2.135186	0.515900
1	-10.857149	-2.527324	-0.630690	1	-10.868723	-2.480932	-0.731901	1	-10.886931	-2.460764	-0.656517
8	-7.484594	-1.007734	0.080806	8	-7.496627	-0.973980	0.008080	8	-7.505075	-0.964638	0.060528
1	-8.060575	-1.695930	-0.251490	1	-8.072358	-1.660351	-0.328401	1	-8.085276	-1.648678	-0.273001
1	-6.676596	-1.107437	-0.422470	1	-6.684471	-1.077787	-0.487616	1	-6.697093	-1.069509	-0.441725
8	0.665241	-4.899336	-4.520563	8	0.678981	-4.906187	-4.512331	8	0.624290	-4.908629	-4.532440
1	1.428594	-5.457168	-4.670009	1	1.441380	-5.467368	-4.653903	1	1.384029	-5.471546	-4.681227
1	1.027427	-4.019233	-4.423996	1	1.043871	-4.027415	-4.413827	1	0.992328	-4.031076	-4.434800
8	-5.060218	8.165976	-1.010034	8	-5.024815	8.187998	-1.074874	8	-5.016829	8.193064	-1.020962
1	-5.147450	7.544997	-1.733700	1	-5.107962	7.566220	-1.798334	1	-5.107308	7.573167	-1.745157
1	-5.159096	9.025502	-1.420414	1	-5.116411	9.047263	-1.487487	1	-5.109298	9.053513	-1.430907
8	5.998505	-4.627777	-3.621813	8	6.004863	-4.654954	-3.565184	8	5.958059	-4.673976	-3.626326
1	6.192652	-5.518957	-3.331151	1	6.192689	-5.546651	-3.271360	1	6.145743	-5.566648	-3.335993
1	6.047843	-4.099561	-2.825066	1	6.049067	-4.125667	-2.768847	1	6.009916	-4.146631	-2.829164
8	7.458424	-3.259329	-5.609654	8	7.488512	-3.295667	-5.541708	8	7.429945	-3.314199	-5.611291
1	6.828298	-3.804016	-5.139701	1	6.851885	-3.837022	-5.076694	1	6.795492	-3.854891	-5.142548
1	7.180600	-2.361000	-5.428818	1	7.212724	-2.395922	-5.364834	1	7.158001	-2.414118	-5.430234
8	-8.411313	-2.674573	3.979169	8	-8.465818	-2.630769	3.900397	8	-8.448387	-2.627675	3.956532
1	-8.413162	-2.992906	4.882189	1	-8.477236	-2.947644	4.803861	1	-8.453624	-2.946580	4.859338
1	-8.485458	-3.466881	3.446354	1	-8.538326	-3.423620	3.368166	1	-8.527204	-3.419112	3.423094
8	-5.150416	7.787538	2.941728	8	-5.152735	7.816272	2.876485	8	-5.114943	7.812668	2.930423
1	-5.338552	8.437837	3.619049	1	-5.344398	8.468418	3.551034	1	-5.299562	8.463788	3.607920
1	-4.483450	8.200423	2.392176	1	-4.479082	8.225548	2.332421	1	-4.444439	8.221360	2.382043
8	3.415902	5.585626	4.035825	8	3.394117	5.581176	4.052464	8	3.434700	5.551765	4.034598
1	2.538767	5.609667	4.416656	1	2.513638	5.609406	4.425204	1	2.557236	5.581528	4.414261
1	3.959036	6.078245	4.651320	1	3.933606	6.072561	4.672136	1	3.980344	6.040272	4.651150
8	3.547829	0.920860	-8.551724	8	3.622168	0.895724	-8.526027	8	3.551880	0.894440	-8.555853
1	4.346927	0.742879	-8.056521	1	4.415963	0.715278	-8.023245	1	4.349078	0.710700	-8.059693
1	3.001267	1.427246	-7.951053	1	3.072208	1.405300	-7.931181	1	3.007967	1.404144	-7.955583
8	2.918869	-6.889713	-4.264405	8	2.922002	-6.905329	-4.232419	8	2.863968	-6.914471	-4.274566
1	3.598592	-6.796723	-3.596202	1	3.595952	-6.814044	-3.558163	1	3.543405	-6.826548	-3.605386
1	3.328828	-7.416031	-4.950395	1	3.336064	-7.434415	-4.913798	1	3.271261	-7.443120	-4.960350
8	1.648386	-6.920829	3.096714	8	1.584064	-6.919453	3.116794	8	1.583355	-6.941749	3.084814
1	0.716848	-6.978331	2.886071	1	0.654266	-6.973492	2.897715	1	0.651732	-6.992768	2.872878
1	2.025622	-6.415353	2.377042	1	1.969938	-6.416677	2.399816	1	1.964995	-6.438382	2.365984
8	-4.995293	-3.214514	7.750845	8	-5.086709	-3.178594	7.704050	8	-5.041222	-3.193330	7.732447
1	-5.001253	-2.800526	6.888288	1	-5.083076	-2.765968	6.840828	1	-5.043198	-2.778746	6.870158
1	-4.728925	-4.118273	7.581424	1	-4.822507	-4.083703	7.538494	1	-4.780783	-4.098770	7.562787
8	-9.452786	4.348585	1.071085	8	-9.451849	4.391909	0.971894	8	-9.438092	4.404311	1.051705
1	-8.947948	3.536151	1.104585	1	-8.950672	3.577475	1.011292	1	-8.938843	3.588437	1.085347
1	-10.300889	4.119646	1.452437	1	-10.304341	4.167044	1.345818	1	-10.288248	4.180902	1.431763
8	-5.374253	-6.738061	2.383400	8	-5.430944	-6.709173	2.338887	8	-5.436906	-6.710704	2.362162
1	-5.076417	-6.368497	3.214661	1	-5.139219	-6.339491	3.172260	1	-5.137685	-6.343720	3.194069
1	-5.030842	-7.631641	2.381537	1	-5.091189	-7.604144	2.341569	1	-5.099586	-7.606601	2.360168
8	-5.224944	-2.299406	5.156825	8	-5.288852	-2.266718	5.106605	8	-5.261131	-2.274983	5.138729
1	-6.012981	-2.283504	4.613327	1	-6.071811	-2.248471	4.555886	1	-6.048308	-2.253360	4.594180
1	-4.825149	-1.439618	5.021995	1	-4.884321	-1.408785	4.974097	1	-4.855313	-1.417849	5.005007
8	-1.292470	7.290212	-1.469965	8	-1.256634	7.296127	-1.498894	8	-1.254513	7.291969	-1.476399
1	-1.274399	6.702582	-0.715254	1	-1.247880	6.709642	-0.743129	1	-1.241464	6.703736	-0.722054
1	-1.355156	6.706586	-2.226481	1	-1.314782	6.711551	-2.255038	1	-1.320147	6.709277	-2.233386
8	-1.659406	-8.759822	0.236771	8	-1.704911	-8.749516	0.229550	8	-1.733011	-8.756306	0.219199
1	-2.241426	-8.008308	0.125581	1	-2.282807	-7.995812	0.111855	1	-2.309751	-8.000775	0.107723
1	-1.701167	-8.960010	1.171005	1	-1.756044	-8.948034	1.163676	1	-1.777396	-8.956817	1.153243
8	5.201338	-0.493409	-1.671891	8	5.206816	-0.514245	-1.629127	8	5.186422	-0.535551	-1.674739
1	4.327654	-0.222945	-1.952311	1	4.336853	-0.240666	-1.917961	1	4.314979	-0.258962	-1.956155
1	5.797494	0.066690	-2.168424	1	5.809785	0.042619	-2.121054	1	5.787048	0.020799	-2.170096
8	0.136545	-4.687867	0.998836	8	0.100650	-4.683708	1.001656	8	0.089587	-4.697173	0.986381
1	0.124493	-4.809329	0.049545	1	0.096792	-4.806642	0.052486	1	0.077991	-4.817929	0.036996
1	-0.767924	-4.469046	1.224045	1	-0.804939	-4.460836	1.218226	1	-0.813675	-4.472347	1.210517