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1 "C:\Program Files\Python38\python.exe" "C:\Program Files\JetBrains\PyCharm 2020.3.2\plugins\python\helpers\pydev\pydevd.py" --multiproc --qt-support=auto --client 127.0.0.1 --port 53565 --file "C:/Users/Ivan Kalinichenka/.AA_Programming/Projects/AA_KnabCase/Predicting-Cross-Sell/main.py"
2 Connected to pydev debugger (build 203.6682.179)
3 ****Processing data, at 21:56:05****
4 ****Reading df list of time series data from file****
5 sample size: 1341
6 number of periods: 12
7 ****Transforming datasets & adding some variables at 21:56:05****
8 Taking log of saldototaal, minimum that gets added to log : -66.66
9 Taking log of logins_totaal, minimum that gets added to log : 0.0
10 Taking log of aantaltransacties_totaal, minimum that gets added to log: 0.0
11 Taking log of saldototaal, minimum that gets added to log : -200.77
12 Taking log of logins_totaal, minimum that gets added to log : 0.0
13 Taking log of aantaltransacties_totaal, minimum that gets added to log: 0.0
14 Taking log of saldototaal, minimum that gets added to log : -89.05
15 Taking log of logins_totaal, minimum that gets added to log : 0.0
16 Taking log of aantaltransacties_totaal, minimum that gets added to log: 0.0
17 Taking log of saldototaal, minimum that gets added to log : -108.97
18 Taking log of logins_totaal, minimum that gets added to log : 0.0
19 Taking log of aantaltransacties_totaal, minimum that gets added to log: 0.0
20 Taking log of saldototaal, minimum that gets added to log : -74.89
21 Taking log of logins_totaal, minimum that gets added to log : 0.0
22 Taking log of aantaltransacties_totaal, minimum that gets added to log: 0.0
23 Taking log of saldototaal, minimum that gets added to log : -89.89
24 Taking log of logins_totaal, minimum that gets added to log
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24 : 0.0
25 Taking log of aantaltransacties_totaal, minimum that gets
     added to log: 0.0
26 Taking log of saldototaal, minimum that gets added to log
     : -104.89
27 Taking log of logins_totaal, minimum that gets added to log
     : 0.0
28 Taking log of aantaltransacties_totaal, minimum that gets
     added to log: 0.0
29 Taking log of saldototaal, minimum that gets added to log
     : -119.89
30 Taking log of logins_totaal, minimum that gets added to log
     : 0.0
31 Taking log of aantaltransacties_totaal, minimum that gets
     added to log: 0.0
32 Taking log of saldototaal, minimum that gets added to log
     : -134.89
33 Taking log of logins_totaal, minimum that gets added to log
     : 0.0
34 Taking log of aantaltransacties_totaal, minimum that gets
     added to log: 0.0
35 Taking log of saldototaal, minimum that gets added to log
     : -149.89
36 Taking log of logins_totaal, minimum that gets added to log
     : 0.0
37 Taking log of aantaltransacties_totaal, minimum that gets
     added to log: 0.0
38 Taking log of saldototaal, minimum that gets added to log
     : -694.28
39 Taking log of logins_totaal, minimum that gets added to log
     : 0.0
40 Taking log of aantaltransacties_totaal, minimum that gets
     added to log: 0.0
41 Taking log of saldototaal, minimum that gets added to log
     : -179.89
42 Taking log of logins_totaal, minimum that gets added to log
     : 0.0
43 Taking log of aantaltransacties_totaal, minimum that gets
     added to log: 0.0
44 Doing a check that the ID columns are the same
45 Data creation finished! Total time: 0:00:01
46 Dummy variables made:
47 ['income_1.0', 'income_2.0', 'income_3.0', 'income_4.0', 'income_5.0', 'age_bins_(0, 18]', 'age_bins_(18, 30]', 'age_bins_(30, 40]', 'age_bins_(40, 50]', 'age_bins_(50, 65]', 'age_bins_(65, 200]', 'geslacht_Man', 'geslacht_Man(nen']
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47 ) en vrouw(en)', 'geslacht_Vrouw']
48 Dummy variables made:
49 ['income_1.0', 'income_2.0', 'income_3.0', 'income_4.0', 'income_5.0', 'age_bins_(0, 18]', 'age_bins_(18, 30]', 'age_bins_(30, 40]', 'age_bins_(40, 50]', 'age_bins_(50, 65]', 'age_bins_(65, 200]', 'geslacht_Man', 'geslacht_Man(nen) en vrouw(en)', 'geslacht_Vrouw', 'hh_size_1.0', 'hh_size_2.0', 'hh_size_3.0', 'hh_size_4.0', 'hh_size_5.0', 'saldototaal_bins_(-inf, 0.0]', 'saldototaal_bins_(0.0, 100.0]', 'saldototaal_bins_(100.0, 1000.0]', 'saldototaal_bins_(1000.0, 5000.0]', 'saldototaal_bins_(5000.0, 15000.0]', 'saldototaal_bins_(15000.0, 50000.0]', 'saldototaal_bins_(50000.0, inf]', 'businessType_BeslotenVennootschap', 'businessType_Eenmanszaak', 'businessType_Maatschap/Stichting', 'businessType_Vennootschap onder firma', 'businessType_meerdere']
50 ****Defining variables to use at 21:56:07****
51 Running cross sell model
52 ****Running HMM at 21:56:07****
53 dependent variable: ['business_max', 'retail_max', 'joint_max', 'accountoverlay_max']
54 covariates: ['log_logins_totaal', 'log_aantaltransacties_totaal', 'income_2.0', 'income_3.0', 'income_4.0', 'income_5.0', 'age_bins_(30, 40]', 'age_bins_(40, 50]', 'age_bins_(50, 65]', 'age_bins_(65, 200]', 'geslacht_Vrouw', 'hh_size_2.0', 'hh_size_3.0', 'hh_size_4.0', 'hh_size_5.0', 'saldototaal_bins_(-inf, 0.0]', 'saldototaal_bins_(100.0, 1000.0]', 'saldototaal_bins_(1000.0, 5000.0]', 'saldototaal_bins_(5000.0, 15000.0]', 'saldototaal_bins_(15000.0, 50000.0]', 'saldototaal_bins_(50000.0, inf]', 'businessType_Besloten Vennootschap', 'businessType_Eenmanszaak', 'businessType_Maatschap/Stichting', 'businessType_Vennootschap onder firma', 'businessType_meerdere']
55 number of periods: 6
56 number of segments: 4
57 number of people: 1341
58 regularization term: 0.05
59 Starting values: [ 1.70303028e+00, -5.39006674e-01, -9.31485940e-01, 6.39025217e-05, -1.60316646e-02, -3.06388283e-02, -3.03146217e-13, -1.89339606e+00, 2.70506590e+00, 2.51628312e-02, 2.12857321e-03, -6.46890508e-05, -1.88463989e-04, -4.27435886e-01, 1.04932339e-03, -1.70593161e+00, -1.70961731e-04, -3.93441552e-04, 1.12121062e-07, 3.24054551e+00, -8.25434700e-03, 1.91495534e-06, -5.45449071e-02, 2.
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59	$62847176e+01, 6.87125690e-03, 2.20946105e+01, -4.21779659e-10, 6.36988748e+00, -1.14423830e+00, 3.35751190e-01, -1.61310069e-03, 2.94729653e+00, 8.57767320e-14, 1.37429955e+00, -2.93844520e+00, 1.68575331e-01, -2.43806375e+00, 1.98029974e-03, -4.55784572e-01, 1.18992473e-02, -1.20367572e-08, 1.57298485e+00, 1.34996902e-02, 5.55851215e-06, -4.47960672e-03, -2.99283573e-03, 4.07007113e+00, 6.77118078e-07, 1.64402863e-05, 1.68739728e+01, -1.50287824e-06, 6.11186368e-12, 1.19829494e+01, -9.54565651e-01, 1.51823114e+01, -1.20430508e+00, 2.05083980e-01, -1.49975747e-07, 9.50257206e-01, -1.56934043e-04, 2.69130966e-03, -3.50901012e-01, 2.20583187e+00, -3.87986794e-02, -2.43460349e-02, 3.25499752e-02, 3.76655811e-02, -2.05825715e-05, 5.24213422e-02, -1.60659737e-03, 3.23985673e-03, 5.01696048e-05, 2.59920583e-04, 3.07589927e+00, -2.39882316e-03, -1.64412299e-01, 5.31226684e-10, -5.79069055e-10, -1.22856385e+01, 7.62103142e-09, -1.58643597e+01, -4.92366398e-04, -1.55890496e-05, -5.41679156e-01, 5.51534121e-03, 2.28007305e-04, -1.67807973e-03, -8.28108609e-05, -6.02083402e-03, 2.70640086e+00, 3.69536920e+00, 9.62921415e+00, -5.33083216e-03, -5.22765717e-03, 8.05634000e-01, 2.41074846e-04, 1.55942895e-08, -6.16247654e-07, -1.48736120e-04, -7.38447875e-03, -6.05609022e-04, -1.15883156e-02, -4.09281636e-03, 7.04873555e-01, -8.44650034e-03, -1.42604631e-01, -6.28960419e-06, 6.21908414e-08, 1.30097872e-04, 7.81256380e-05, 2.24469100e-02, -3.54327151e-02, 7.97440547e-04, -1.24673871e-03, -2.06377689e-02, 3.96967156e-04, 2.65296878e-04, -1.83010469e-04, -3.21357358e-04, 1.97938113e+00, 7.69691313e-02, 2.85890645e-03, -3.45173335e-10, -5.35153444e-04, 7.36725306e-05, 2.41439255e-06, 4.04780977e-08, -1.02360330e-10, 2.09834607e-05, 2.83792113e-02, -5.96048626e-08, 1.80223474e-05, 2.87287463e-04, 9.16796831e-06, 9.78604119e-07, 9.16672573e-06, 3.25043798e-02, 9.72181793e-03, 8.05055594e-05, 3.11022910e-06, 1.58287224e+01, 1.69050992e+01, 1.76872118e-02, 1.38215773e+01, 1.33281236e+01, 2.23386029e+00, 2.23475039e-06, 2.18649547e-05, -6.36151045e-06, 6.05543439e-06, 6.31721785e-01, 1.43022742e-01, -1.20116430e-04, -5.30984167e-04, -8.70225622e-04, 2.60294596e-03, -1.94706160e-02, -1.24346772e-05, -5.37150083e-03, -3.18410805e-03, 3.55549197e-02, 1.93515021e-03, -6.29534159e-03, 6.59460283e-02, 1.85334964e-05, -1.44510759e-06, 3.13090852e-05, -1.10257780e-10, -1.30968241e+01, -8.51013941e-11, -2.26755894e-02, 9.59324522e+00, 8.49949702e+00, -7.31131416e+00, -3.21980456e-04, -4.07150740e-01, 8.15705977e-01, -6.$
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59 33708979e+00, 1.06818672e+01, 1.27697296e+01, -1.13141902e
-04, 7.82741886e-02, -5.19295081e-01, 8.51396842e-01, -6.
56647762e-01, -1.06072188e+01, -7.13417558e+00, -1.
88819208e+01, 1.30301323e+00, -2.13885923e-01, -9.
82600343e+00, -9.53952632e+00, -9.52876032e-01, -4.
41570931e+00, 7.29208225e+00, 1.39573792e+00, -4.91647538e
-01, -1.71910309e+00, -1.99341614e+00]
60 ****Starting EM prodecure, at 21:56:07****
61 tolerance: 0.001
62 number of parameters: 199
63 maximization method: Nelder-Mead
64 random starting points: True
65 E-step duration: 0:00:04
66 function value: 11646.160861737382 at iteration 1000
67 function value: 11646.140603203146 at iteration 2000
68 function value: 11646.124395066377 at iteration 3000
69 function value: 11646.106118473239 at iteration 4000
70 function value: 11646.100067801015 at iteration 5000
71 function value: 11646.09640052888 at iteration 6000
72 function value: 11646.093050576315 at iteration 7000
73 function value: 11646.09079815701 at iteration 8000
74 Optimization terminated successfully.
75             Current function value: 11646.089346
76             Iterations: 7790
77             Function evaluations: 8546
78 For simplex iteration number 2 :
79 Log difference is -0.0000 with previous logl 11646.09027
and current logl 11646.09025
80 Maximal x difference between simplex iterations is 0.0213
at position 144 with current x: 13.380602036769933:.5f and
with previous x : 13.401880003547078:.5f
81 For simplex iteration number 3 :
82 Log difference is -0.0000 with previous logl 11646.09025
and current logl 11646.09025
83 Maximal x difference between simplex iterations is 0.0272
at position 144 with current x: 13.407826393412707:.5f and
with previous x : 13.380602036769933:.5f
84 For simplex iteration number 4 :
85 Log difference is -0.0000 with previous logl 11646.09025
and current logl 11646.09025
86 Maximal x difference between simplex iterations is 0.0313
at position 144 with current x: 13.376525436319177:.5f and
with previous x : 13.407826393412707:.5f
87 For simplex iteration number 5 :
88 Log difference is -0.0000 with previous logl 11646.09025
and current logl 11646.09023
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89 Maximal x difference between simplex iterations is 0.0300
    at position 186 with current x: -7.129448248044843:.5f and
    with previous x : -7.099459812264258:.5f
90 For simplex iteration number 6 :
91 Log difference is -0.0000 with previous logl 11646.09023
    and current logl 11646.09023
92 Maximal x difference between simplex iterations is 0.0402
    at position 190 with current x: -9.849961105342278:.5f and
    with previous x : -9.890126199203294:.5f
93 For simplex iteration number 7 :
94 Log difference is -0.0000 with previous logl 11646.09023
    and current logl 11646.09023
95 Maximal x difference between simplex iterations is 0.0423
    at position 190 with current x: -9.89227813498039:.5f and
    with previous x : -9.849961105342278:.5f
96 For simplex iteration number 8 :
97 Log difference is -0.0000 with previous logl 11646.09023
    and current logl 11646.09023
98 Maximal x difference between simplex iterations is 0.0264
    at position 187 with current x: -18.842348022244458:.5f
    and with previous x : -18.868736401623195:.5f
99 For simplex iteration number 9 :
100 Log difference is -0.0000 with previous logl 11646.09023
    and current logl 11646.09023
101 Maximal x difference between simplex iterations is 0.0298
    at position 185 with current x: -10.593951134280111:.5f
    and with previous x : -10.6237544824345:.5f
102 For simplex iteration number 10 :
103 Log difference is -0.0000 with previous logl 11646.09023
    and current logl 11646.09023
104 Maximal x difference between simplex iterations is 0.0265
    at position 23 with current x: 26.241652737463273:.5f and
    with previous x : 26.268180231352055:.5f
105 For simplex iteration number 11 :
106 Log difference is -0.0000 with previous logl 11646.09023
    and current logl 11646.09023
107 Maximal x difference between simplex iterations is 0.0264
    at position 144 with current x: 13.400643407747147:.5f and
    with previous x : 13.427033856613841:.5f
108 For simplex iteration number 12 :
109 Log difference is -0.0000 with previous logl 11646.09023
    and current logl 11646.09022
110 Maximal x difference between simplex iterations is 0.1049
    at position 177 with current x: -6.2136860130675196:.5f
    and with previous x : -6.318545985813065:.5f
111 For simplex iteration number 13 :
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112 Log difference is -0.0000 with previous logl 11646.09022
    and current logl 11646.09022
113 Maximal x difference between simplex iterations is 0.0962
    at position 177 with current x: -6.30986409107199:.5f and
    with previous x : -6.2136860130675196:.5f
114 For simplex iteration number 14 :
115 Log difference is -0.0000 with previous logl 11646.09022
    and current logl 11646.09022
116 Maximal x difference between simplex iterations is 0.0187
    at position 52 with current x: 11.865146916795556:.5f and
    with previous x : 11.883836250265762:.5f
117 For simplex iteration number 15 :
118 Log difference is -0.0000 with previous logl 11646.09022
    and current logl 11646.09022
119 Maximal x difference between simplex iterations is 0.0642
    at position 143 with current x: 13.865244184278158:.5f and
    with previous x : 13.929396213666251:.5f
120 For simplex iteration number 16 :
121 Log difference is -0.0000 with previous logl 11646.09022
    and current logl 11646.09021
122 Maximal x difference between simplex iterations is 0.0532
    at position 143 with current x: 13.918484807032378:.5f and
    with previous x : 13.865244184278158:.5f
123 For simplex iteration number 17 :
124 Log difference is -0.0000 with previous logl 11646.09021
    and current logl 11646.09021
125 Maximal x difference between simplex iterations is 0.0447
    at position 91 with current x: 9.627601201692027:.5f and
    with previous x : 9.672281343709644:.5f
126 For simplex iteration number 18 :
127 Log difference is -0.0000 with previous logl 11646.09021
    and current logl 11646.09021
128 Maximal x difference between simplex iterations is 0.0341
    at position 143 with current x: 13.932325647498438:.5f and
    with previous x : 13.898244078131574:.5f
129 For simplex iteration number 19 :
130 Log difference is -0.0000 with previous logl 11646.09021
    and current logl 11646.09021
131 Maximal x difference between simplex iterations is 0.0218
    at position 23 with current x: 26.228519724252223:.5f and
    with previous x : 26.250351398328448:.5f
132 For simplex iteration number 20 :
133 Log difference is -0.0000 with previous logl 11646.09021
    and current logl 11646.09021
134 Maximal x difference between simplex iterations is 0.0195
    at position 23 with current x: 26.24800170204886:.5f and
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134 with previous x : 26.228519724252223:.5f
135 For simplex iteration number 21 :
136 Log difference is -0.0000 with previous logl 11646.09021
    and current logl 11646.09021
137 Maximal x difference between simplex iterations is 0.0238
    at position 49 with current x: 16.93229929577368:.5f and
    with previous x : 16.90846184758432:.5f
138 For simplex iteration number 22 :
139 Log difference is -0.0000 with previous logl 11646.09021
    and current logl 11646.09020
140 Maximal x difference between simplex iterations is 0.0319
    at position 143 with current x: 13.943495028037457:.5f and
    with previous x : 13.911617265057682:.5f
141 For simplex iteration number 23 :
142 Log difference is -0.0000 with previous logl 11646.09020
    and current logl 11646.09020
143 Maximal x difference between simplex iterations is 0.0483
    at position 187 with current x: -18.903473756136897:.5f
    and with previous x : -18.855157737414117:.5f
144 For simplex iteration number 24 :
145 Log difference is -0.0000 with previous logl 11646.09020
    and current logl 11646.09020
146 Maximal x difference between simplex iterations is 0.0584
    at position 144 with current x: 13.463269079841481:.5f and
    with previous x : 13.404838103767:.5f
147 For simplex iteration number 25 :
148 Log difference is -0.0000 with previous logl 11646.09020
    and current logl 11646.09019
149 Maximal x difference between simplex iterations is 0.0733
    at position 144 with current x: 13.390005181515193:.5f and
    with previous x : 13.463269079841481:.5f
150 For simplex iteration number 26 :
151 Log difference is -0.0000 with previous logl 11646.09019
    and current logl 11646.09019
152 Maximal x difference between simplex iterations is 0.0254
    at position 186 with current x: -7.1010393558887746:.5f
    and with previous x : -7.126414766763964:.5f
153 For simplex iteration number 27 :
154 Log difference is -0.0000 with previous logl 11646.09019
    and current logl 11646.09019
155 Maximal x difference between simplex iterations is 0.0201
    at position 186 with current x: -7.121185579427568:.5f and
    with previous x : -7.1010393558887746:.5f
156 For simplex iteration number 28 :
157 Log difference is -0.0000 with previous logl 11646.09019
    and current logl 11646.09019
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158 Maximal x difference between simplex iterations is 0.0159
      at position 15 with current x: -1.4060311995186714:.5f and
      with previous x : -1.4219091008944273:.5f
159 For simplex iteration number 29 :
160 Log difference is -0.0000 with previous logl 11646.09019
      and current logl 11646.09019
161 Maximal x difference between simplex iterations is 0.0222
      at position 190 with current x: -9.88096696374975:.5f and
      with previous x : -9.90312115374908:.5f
162 For simplex iteration number 30 :
163 Log difference is -0.0000 with previous logl 11646.09019
      and current logl 11646.09019
164 Maximal x difference between simplex iterations is 0.0263
      at position 23 with current x: 26.266372148545614:.5f and
      with previous x : 26.24002404302267:.5f
165 For simplex iteration number 31 :
166 Log difference is -0.0000 with previous logl 11646.09019
      and current logl 11646.09019
167 Maximal x difference between simplex iterations is 0.0244
      at position 89 with current x: 2.6153224591639983:.5f and
      with previous x : 2.590926809998273:.5f
168 For simplex iteration number 32 :
169 Log difference is -0.0000 with previous logl 11646.09019
      and current logl 11646.09019
170 Maximal x difference between simplex iterations is 0.0166
      at position 140 with current x: 15.834788295833746:.5f and
      with previous x : 15.81820181575835:.5f
171 For simplex iteration number 33 :
172 Log difference is -0.0000 with previous logl 11646.09019
      and current logl 11646.09018
173 Maximal x difference between simplex iterations is 0.0355
      at position 143 with current x: 13.945953015650051:.5f and
      with previous x : 13.910491073062694:.5f
174 For simplex iteration number 34 :
175 Log difference is -0.0000 with previous logl 11646.09018
      and current logl 11646.09018
176 Maximal x difference between simplex iterations is 0.0485
      at position 186 with current x: -7.18341411469416:.5f and
      with previous x : -7.134916678255836:.5f
177 For simplex iteration number 35 :
178 Log difference is -0.0000 with previous logl 11646.09018
      and current logl 11646.09018
179 Maximal x difference between simplex iterations is 0.0623
      at position 186 with current x: -7.12112402675813:.5f and
      with previous x : -7.18341411469416:.5f
180 For simplex iteration number 36 :
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181 Log difference is -0.0000 with previous logl 11646.09018
    and current logl 11646.09018
182 Maximal x difference between simplex iterations is 0.0319
    at position 141 with current x: 17.02623868972076:.5f and
    with previous x : 16.9943140039617:.5f
183 For simplex iteration number 37 :
184 Log difference is -0.0000 with previous logl 11646.09018
    and current logl 11646.09016
185 Maximal x difference between simplex iterations is 0.0487
    at position 141 with current x: 16.977577235983397:.5f and
    with previous x : 17.02623868972076:.5f
186 For simplex iteration number 38 :
187 Log difference is -0.0000 with previous logl 11646.09016
    and current logl 11646.09016
188 Maximal x difference between simplex iterations is 0.0347
    at position 177 with current x: -6.3172405609750015:.5f
    and with previous x : -6.282572200895913:.5f
189 For simplex iteration number 39 :
190 Log difference is -0.0000 with previous logl 11646.09016
    and current logl 11646.09016
191 Maximal x difference between simplex iterations is 0.0341
    at position 23 with current x: 26.23076739657091:.5f and
    with previous x : 26.264898151956036:.5f
192 For simplex iteration number 40 :
193 Log difference is -0.0000 with previous logl 11646.09016
    and current logl 11646.09015
194 Maximal x difference between simplex iterations is 0.0293
    at position 187 with current x: -18.885904576867894:.5f
    and with previous x : -18.85659254957892:.5f
195 For simplex iteration number 41 :
196 Log difference is -0.0000 with previous logl 11646.09015
    and current logl 11646.09015
197 Maximal x difference between simplex iterations is 0.0681
    at position 140 with current x: 15.895964139162182:.5f and
    with previous x : 15.827899122233358:.5f
198 For simplex iteration number 42 :
199 Log difference is -0.0000 with previous logl 11646.09015
    and current logl 11646.09015
200 Maximal x difference between simplex iterations is 0.0621
    at position 140 with current x: 15.833912646606652:.5f and
    with previous x : 15.895964139162182:.5f
201 For simplex iteration number 43 :
202 Log difference is -0.0000 with previous logl 11646.09015
    and current logl 11646.09015
203 Maximal x difference between simplex iterations is 0.0451
    at position 185 with current x: -10.601171963447657:.5f
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203 and with previous x : -10.646243031178683:.5f
204 For simplex iteration number 44 :
205 Log difference is -0.0000 with previous logl 11646.09015
    and current logl 11646.09015
206 Maximal x difference between simplex iterations is 0.0266
    at position 23 with current x: 26.214878846685515:.5f and
    with previous x : 26.241478777300728:.5f
207 For simplex iteration number 45 :
208 Log difference is -0.0000 with previous logl 11646.09015
    and current logl 11646.09015
209 Maximal x difference between simplex iterations is 0.0446
    at position 140 with current x: 15.849802265460522:.5f and
    with previous x : 15.805152897271192:.5f
210 For simplex iteration number 46 :
211 Log difference is -0.0000 with previous logl 11646.09015
    and current logl 11646.09014
212 Maximal x difference between simplex iterations is 0.0220
    at position 141 with current x: 16.98135884798407:.5f and
    with previous x : 17.003397975616956:.5f
213 For simplex iteration number 47 :
214 Log difference is -0.0000 with previous logl 11646.09014
    and current logl 11646.09014
215 Maximal x difference between simplex iterations is 0.0196
    at position 190 with current x: -9.888314858802534:.5f and
    with previous x : -9.907885158454793:.5f
216 For simplex iteration number 48 :
217 Log difference is -0.0000 with previous logl 11646.09014
    and current logl 11646.09014
218 Maximal x difference between simplex iterations is 0.0176
    at position 144 with current x: 13.392895208275059:.5f and
    with previous x : 13.375332255099547:.5f
219 For simplex iteration number 49 :
220 Log difference is -0.0000 with previous logl 11646.09014
    and current logl 11646.09014
221 Maximal x difference between simplex iterations is 0.0209
    at position 177 with current x: -6.298574492488658:.5f and
    with previous x : -6.319510502980483:.5f
222 For simplex iteration number 50 :
223 Log difference is -0.0000 with previous logl 11646.09014
    and current logl 11646.09014
224 Maximal x difference between simplex iterations is 0.0269
    at position 177 with current x: -6.325462942341838:.5f and
    with previous x : -6.298574492488658:.5f
225 For simplex iteration number 51 :
226 Log difference is -0.0000 with previous logl 11646.09014
    and current logl 11646.09013
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227 Maximal x difference between simplex iterations is 0.0261
      at position 89 with current x: 2.6195640758134027:.5f and
      with previous x : 2.593459766435223:.5f
228 For simplex iteration number 52 :
229 Log difference is -0.0000 with previous logl 11646.09013
      and current logl 11646.09013
230 Maximal x difference between simplex iterations is 0.0201
      at position 173 with current x: -7.305015423964692:.5f and
      with previous x : -7.284910448905002:.5f
231 For simplex iteration number 53 :
232 Log difference is -0.0000 with previous logl 11646.09013
      and current logl 11646.09013
233 Maximal x difference between simplex iterations is 0.0187
      at position 80 with current x: -15.942205515437529:.5f and
      with previous x : -15.923511203575579:.5f
234 For simplex iteration number 54 :
235 Log difference is -0.0000 with previous logl 11646.09013
      and current logl 11646.09013
236 Maximal x difference between simplex iterations is 0.0244
      at position 144 with current x: 13.409661245141303:.5f and
      with previous x : 13.385290491517107:.5f
237 For simplex iteration number 55 :
238 Log difference is -0.0000 with previous logl 11646.09013
      and current logl 11646.09012
239 Maximal x difference between simplex iterations is 0.1227
      at position 23 with current x: 26.1172874170468:.5f and
      with previous x : 26.24001426448993:.5f
240 For simplex iteration number 56 :
241 Log difference is -0.0000 with previous logl 11646.09012
      and current logl 11646.09012
242 Maximal x difference between simplex iterations is 0.1434
      at position 23 with current x: 26.260693221086825:.5f and
      with previous x : 26.1172874170468:.5f
243 For simplex iteration number 57 :
244 Log difference is -0.0000 with previous logl 11646.09012
      and current logl 11646.09012
245 Maximal x difference between simplex iterations is 0.0292
      at position 177 with current x: -6.307886503520374:.5f and
      with previous x : -6.337037759532414:.5f
246 For simplex iteration number 58 :
247 Log difference is -0.0000 with previous logl 11646.09012
      and current logl 11646.09012
248 Maximal x difference between simplex iterations is 0.0403
      at position 144 with current x: 13.379710023770256:.5f and
      with previous x : 13.419992371860408:.5f
249 For simplex iteration number 59 :
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250 Log difference is -0.0000 with previous logl 11646.09012
    and current logl 11646.09011
251 Maximal x difference between simplex iterations is 0.0199
    at position 185 with current x: -10.592390883744141:.5f
    and with previous x : -10.61224638375915:.5f
252 For simplex iteration number 60 :
253 Log difference is -0.0000 with previous logl 11646.09011
    and current logl 11646.09011
254 Maximal x difference between simplex iterations is 0.0188
    at position 177 with current x: -6.303485194023464:.5f and
    with previous x : -6.3222848380921866:.5f
255 For simplex iteration number 61 :
256 Log difference is -0.0000 with previous logl 11646.09011
    and current logl 11646.09011
257 Maximal x difference between simplex iterations is 0.0215
    at position 186 with current x: -7.127048547030247:.5f and
    with previous x : -7.105515500673232:.5f
258 For simplex iteration number 62 :
259 Log difference is -0.0000 with previous logl 11646.09011
    and current logl 11646.09011
260 Maximal x difference between simplex iterations is 0.0237
    at position 143 with current x: 13.908393024048873:.5f and
    with previous x : 13.932106498698586:.5f
261 For simplex iteration number 63 :
262 Log difference is -0.0000 with previous logl 11646.09011
    and current logl 11646.09010
263 Maximal x difference between simplex iterations is 0.0211
    at position 140 with current x: 15.832983761301149:.5f and
    with previous x : 15.81183767879924:.5f
264 For simplex iteration number 64 :
265 Log difference is -0.0000 with previous logl 11646.09010
    and current logl 11646.09009
266 Maximal x difference between simplex iterations is 0.0136
    at position 173 with current x: -7.311927117576902:.5f and
    with previous x : -7.298319608566241:.5f
267 For simplex iteration number 65 :
268 Log difference is -0.0000 with previous logl 11646.09009
    and current logl 11646.09009
269 Maximal x difference between simplex iterations is 0.0243
    at position 140 with current x: 15.820463086474959:.5f and
    with previous x : 15.84478903903022:.5f
270 For simplex iteration number 66 :
271 Log difference is -0.0000 with previous logl 11646.09009
    and current logl 11646.09009
272 Maximal x difference between simplex iterations is 0.0219
    at position 140 with current x: 15.842323096526501:.5f and
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272 with previous x : 15.820463086474959:.5f
273 For simplex iteration number 67 :
274 Log difference is -0.0000 with previous logl 11646.09009
    and current logl 11646.09009
275 Maximal x difference between simplex iterations is 0.0134
    at position 140 with current x: 15.828897903391248:.5f and
    with previous x : 15.842323096526501:.5f
276 For simplex iteration number 68 :
277 Log difference is -0.0000 with previous logl 11646.09009
    and current logl 11646.09008
278 Maximal x difference between simplex iterations is 0.0132
    at position 191 with current x: -9.602192943407854:.5f and
    with previous x : -9.615382326731936:.5f
279 For simplex iteration number 69 :
280 Log difference is -0.0000 with previous logl 11646.09008
    and current logl 11646.09007
281 Maximal x difference between simplex iterations is 0.0176
    at position 143 with current x: 13.911218346075277:.5f and
    with previous x : 13.92878221771142:.5f
282 For simplex iteration number 70 :
283 Log difference is -0.0000 with previous logl 11646.09007
    and current logl 11646.09007
284 Maximal x difference between simplex iterations is 0.0238
    at position 185 with current x: -10.600785562672757:.5f
    and with previous x : -10.576971093054855:.5f
285 For simplex iteration number 71 :
286 Log difference is -0.0000 with previous logl 11646.09007
    and current logl 11646.09006
287 Maximal x difference between simplex iterations is 0.0193
    at position 144 with current x: 13.410198107806117:.5f and
    with previous x : 13.390860684156708:.5f
288 For simplex iteration number 72 :
289 Log difference is -0.0000 with previous logl 11646.09006
    and current logl 11646.09006
290 Maximal x difference between simplex iterations is 0.0187
    at position 49 with current x: 16.920520480028664:.5f and
    with previous x : 16.939201116586695:.5f
291 For simplex iteration number 73 :
292 Log difference is -0.0000 with previous logl 11646.09006
    and current logl 11646.09006
293 Maximal x difference between simplex iterations is 0.0142
    at position 190 with current x: -9.914085359834841:.5f and
    with previous x : -9.899860585787334:.5f
294 For simplex iteration number 74 :
295 Log difference is -0.0000 with previous logl 11646.09006
    and current logl 11646.09005
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296 Maximal x difference between simplex iterations is 0.0227
      at position 89 with current x: 2.6286398911237416:.5f and
      with previous x : 2.6059889795322224:.5f
297 For simplex iteration number 75 :
298 Log difference is -0.0000 with previous logl 11646.09005
      and current logl 11646.09004
299 Maximal x difference between simplex iterations is 0.0277
      at position 89 with current x: 2.600902096502335:.5f and
      with previous x : 2.6286398911237416:.5f
300 For simplex iteration number 76 :
301 Log difference is -0.0000 with previous logl 11646.09004
      and current logl 11646.09004
302 Maximal x difference between simplex iterations is 0.0074
      at position 52 with current x: 11.853277894835921:.5f and
      with previous x : 11.860679603146728:.5f
303 For simplex iteration number 77 :
304 Log difference is -0.0000 with previous logl 11646.09004
      and current logl 11646.09003
305 Maximal x difference between simplex iterations is 0.0133
      at position 23 with current x: 26.258354669779543:.5f and
      with previous x : 26.245103798245673:.5f
306 For simplex iteration number 78 :
307 Log difference is -0.0000 with previous logl 11646.09003
      and current logl 11646.09003
308 Maximal x difference between simplex iterations is 0.0172
      at position 177 with current x: -6.30171189505635:.5f and
      with previous x : -6.318945623946103:.5f
309 For simplex iteration number 79 :
310 Log difference is -0.0000 with previous logl 11646.09003
      and current logl 11646.09003
311 Maximal x difference between simplex iterations is 0.0339
      at position 177 with current x: -6.3355809628359525:.5f
      and with previous x : -6.30171189505635:.5f
312 For simplex iteration number 80 :
313 Log difference is -0.0000 with previous logl 11646.09003
      and current logl 11646.09003
314 Maximal x difference between simplex iterations is 0.0197
      at position 187 with current x: -18.850524863916625:.5f
      and with previous x : -18.87022335777113:.5f
315 For simplex iteration number 81 :
316 Log difference is -0.0000 with previous logl 11646.09003
      and current logl 11646.09003
317 Maximal x difference between simplex iterations is 0.0202
      at position 143 with current x: 13.914672361232203:.5f and
      with previous x : 13.934834771631998:.5f
318 For simplex iteration number 82 :
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319 Log difference is -0.0000 with previous logl 11646.09003  
and current logl 11646.09002  
320 Maximal x difference between simplex iterations is 0.0216  
at position 15 with current x: -1.4061425408189963:.5f and  
with previous x : -1.4276994199946678:.5f  
321 For simplex iteration number 83 :  
322 Log difference is -0.0000 with previous logl 11646.09002  
and current logl 11646.09002  
323 Maximal x difference between simplex iterations is 0.0132  
at position 186 with current x: -7.1168380572841:.5f and  
with previous x : -7.130073302463406:.5f  
324 For simplex iteration number 84 :  
325 Log difference is -0.0000 with previous logl 11646.09002  
and current logl 11646.09001  
326 Maximal x difference between simplex iterations is 0.0152  
at position 89 with current x: 2.5990319687681787:.5f and  
with previous x : 2.6142620499996037:.5f  
327 For simplex iteration number 85 :  
328 Log difference is -0.0000 with previous logl 11646.09001  
and current logl 11646.09000  
329 Maximal x difference between simplex iterations is 0.0151  
at position 49 with current x: 16.92281338230417:.5f and  
with previous x : 16.907757375356766:.5f  
330 For simplex iteration number 86 :  
331 Log difference is -0.0000 with previous logl 11646.09000  
and current logl 11646.09000  
332 Maximal x difference between simplex iterations is 0.0197  
at position 186 with current x: -7.1276615394467395:.5f  
and with previous x : -7.107926031181343:.5f  
333 For simplex iteration number 87 :  
334 Log difference is -0.0000 with previous logl 11646.09000  
and current logl 11646.09000  
335 Maximal x difference between simplex iterations is 0.0257  
at position 177 with current x: -6.306012140705338:.5f and  
with previous x : -6.331708492553226:.5f  
336 For simplex iteration number 88 :  
337 Log difference is -0.0000 with previous logl 11646.09000  
and current logl 11646.09000  
338 Maximal x difference between simplex iterations is 0.0145  
at position 173 with current x: -7.309247876326162:.5f and  
with previous x : -7.294736614264757:.5f  
339 For simplex iteration number 89 :  
340 Log difference is -0.0000 with previous logl 11646.09000  
and current logl 11646.09000  
341 Maximal x difference between simplex iterations is 0.0133  
at position 186 with current x: -7.113240224563383:.5f and
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341 with previous x : -7.126544017298121:.5f
342 For simplex iteration number 90 :
343 Log difference is -0.0000 with previous logl 11646.09000
    and current logl 11646.08999
344 Maximal x difference between simplex iterations is 0.0132
    at position 141 with current x: 16.98178770876246:.5f and
    with previous x : 16.99495658930918:.5f
345 For simplex iteration number 91 :
346 Log difference is -0.0000 with previous logl 11646.08999
    and current logl 11646.08999
347 Maximal x difference between simplex iterations is 0.0109
    at position 186 with current x: -7.1139846423532:.5f and
    with previous x : -7.124883237908033:.5f
348 For simplex iteration number 92 :
349 Log difference is -0.0000 with previous logl 11646.08999
    and current logl 11646.08998
350 Maximal x difference between simplex iterations is 0.0161
    at position 173 with current x: -7.310698674292206:.5f and
    with previous x : -7.2945564556932405:.5f
351 For simplex iteration number 93 :
352 Log difference is -0.0000 with previous logl 11646.08998
    and current logl 11646.08998
353 Maximal x difference between simplex iterations is 0.0108
    at position 89 with current x: 2.6097667965082607:.5f and
    with previous x : 2.598995221098339:.5f
354 For simplex iteration number 94 :
355 Log difference is -0.0000 with previous logl 11646.08998
    and current logl 11646.08998
356 Maximal x difference between simplex iterations is 0.0261
    at position 23 with current x: 26.218649590055577:.5f and
    with previous x : 26.244724967178172:.5f
357 For simplex iteration number 95 :
358 Log difference is -0.0000 with previous logl 11646.08998
    and current logl 11646.08998
359 Maximal x difference between simplex iterations is 0.0604
    at position 78 with current x: -12.461358757757857:.5f and
    with previous x : -12.400968314021327:.5f
360 For simplex iteration number 96 :
361 Log difference is -0.0000 with previous logl 11646.08998
    and current logl 11646.08997
362 Maximal x difference between simplex iterations is 0.0571
    at position 78 with current x: -12.404220474976665:.5f and
    with previous x : -12.461358757757857:.5f
363 For simplex iteration number 97 :
364 Log difference is -0.0000 with previous logl 11646.08997
    and current logl 11646.08997
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365 Maximal x difference between simplex iterations is 0.0140  
at position 144 with current x: 13.399008013449276:.5f and  
with previous x : 13.413018524523153:.5f

366 For simplex iteration number 98 :

367 Log difference is -0.0000 with previous logl 11646.08997  
and current logl 11646.08997

368 Maximal x difference between simplex iterations is 0.0112  
at position 49 with current x: 16.926248246689063:.5f and  
with previous x : 16.915003764117984:.5f

369 For simplex iteration number 99 :

370 Log difference is -0.0000 with previous logl 11646.08997  
and current logl 11646.08997

371 Maximal x difference between simplex iterations is 0.0330  
at position 23 with current x: 26.272133121371837:.5f and  
with previous x : 26.23914770427575:.5f

372 For simplex iteration number 100 :

373 Log difference is -0.0000 with previous logl 11646.08997  
and current logl 11646.08997

374 Maximal x difference between simplex iterations is 0.0314  
at position 23 with current x: 26.240777026685777:.5f and  
with previous x : 26.272133121371837:.5f

375 For simplex iteration number 101 :

376 Log difference is -0.0000 with previous logl 11646.08997  
and current logl 11646.08997

377 Maximal x difference between simplex iterations is 0.0153  
at position 187 with current x: -18.847755099211753:.5f  
and with previous x : -18.86307627707209:.5f

378 For simplex iteration number 102 :

379 Log difference is -0.0000 with previous logl 11646.08997  
and current logl 11646.08996

380 Maximal x difference between simplex iterations is 0.0327  
at position 90 with current x: 3.604927003775975:.5f and  
with previous x : 3.6376072565977395:.5f

381 For simplex iteration number 103 :

382 Log difference is -0.0000 with previous logl 11646.08996  
and current logl 11646.08996

383 Maximal x difference between simplex iterations is 0.0317  
at position 90 with current x: 3.6366603739369445:.5f and  
with previous x : 3.604927003775975:.5f

384 For simplex iteration number 104 :

385 Log difference is -0.0000 with previous logl 11646.08996  
and current logl 11646.08995

386 Maximal x difference between simplex iterations is 0.0236  
at position 144 with current x: 13.383303482052716:.5f and  
with previous x : 13.406881376539605:.5f

387 For simplex iteration number 105 :

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388 Log difference is -0.0000 with previous logl 11646.08995
    and current logl 11646.08995
389 Maximal x difference between simplex iterations is 0.0305
    at position 186 with current x: -7.10293152174673:.5f and
    with previous x : -7.133453284087267:.5f
390 For simplex iteration number 106 :
391 Log difference is -0.0000 with previous logl 11646.08995
    and current logl 11646.08995
392 Maximal x difference between simplex iterations is 0.1081
    at position 89 with current x: 2.704023032838344:.5f and
    with previous x : 2.595908028405628:.5f
393 For simplex iteration number 107 :
394 Log difference is -0.0000 with previous logl 11646.08995
    and current logl 11646.08995
395 Maximal x difference between simplex iterations is 0.1060
    at position 89 with current x: 2.5980473462137725:.5f and
    with previous x : 2.704023032838344:.5f
396 For simplex iteration number 108 :
397 Log difference is -0.0000 with previous logl 11646.08995
    and current logl 11646.08994
398 Maximal x difference between simplex iterations is 0.0311
    at position 49 with current x: 16.9060688057305:.5f and
    with previous x : 16.93718369447209:.5f
399 For simplex iteration number 109 :
400 Log difference is -0.0000 with previous logl 11646.08994
    and current logl 11646.08994
401 Maximal x difference between simplex iterations is 0.0275
    at position 186 with current x: -7.109054223064823:.5f and
    with previous x : -7.136557653665692:.5f
402 For simplex iteration number 110 :
403 Log difference is -0.0000 with previous logl 11646.08994
    and current logl 11646.08994
404 Maximal x difference between simplex iterations is 0.0452
    at position 144 with current x: 13.356084603496157:.5f and
    with previous x : 13.401322650843865:.5f
405 For simplex iteration number 111 :
406 Log difference is -0.0000 with previous logl 11646.08994
    and current logl 11646.08993
407 Maximal x difference between simplex iterations is 0.0359
    at position 144 with current x: 13.391980448741629:.5f and
    with previous x : 13.356084603496157:.5f
408 For simplex iteration number 112 :
409 Log difference is -0.0000 with previous logl 11646.08993
    and current logl 11646.08993
410 Maximal x difference between simplex iterations is 0.0138
    at position 49 with current x: 16.938475461899948:.5f and
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410 with previous x : 16.924686688492983:.5f
411 For simplex iteration number 113 :
412 Log difference is -0.0000 with previous logl 11646.08993
    and current logl 11646.08992
413 Maximal x difference between simplex iterations is 0.0194
    at position 49 with current x: 16.919092042409773:.5f and
    with previous x : 16.938475461899948:.5f
414 For simplex iteration number 114 :
415 Log difference is -0.0000 with previous logl 11646.08992
    and current logl 11646.08992
416 Maximal x difference between simplex iterations is 0.0161
    at position 177 with current x: -6.33572018068019:.5f and
    with previous x : -6.319659346105858:.5f
417 For simplex iteration number 115 :
418 Log difference is -0.0000 with previous logl 11646.08992
    and current logl 11646.08992
419 Maximal x difference between simplex iterations is 0.0158
    at position 177 with current x: -6.319967657359943:.5f and
    with previous x : -6.33572018068019:.5f
420 For simplex iteration number 116 :
421 Log difference is -0.0000 with previous logl 11646.08992
    and current logl 11646.08992
422 Maximal x difference between simplex iterations is 0.0404
    at position 191 with current x: -9.643338851942818:.5f and
    with previous x : -9.602893279659176:.5f
423 For simplex iteration number 117 :
424 Log difference is -0.0000 with previous logl 11646.08992
    and current logl 11646.08992
425 Maximal x difference between simplex iterations is 0.0372
    at position 191 with current x: -9.606166467513555:.5f and
    with previous x : -9.643338851942818:.5f
426 For simplex iteration number 118 :
427 Log difference is -0.0000 with previous logl 11646.08992
    and current logl 11646.08991
428 Maximal x difference between simplex iterations is 0.0263
    at position 144 with current x: 13.397165550919233:.5f and
    with previous x : 13.370878787630563:.5f
429 For simplex iteration number 119 :
430 Log difference is -0.0000 with previous logl 11646.08991
    and current logl 11646.08991
431 Maximal x difference between simplex iterations is 0.0130
    at position 186 with current x: -7.124027162728273:.5f and
    with previous x : -7.1110018238695885:.5f
432 For simplex iteration number 120 :
433 Log difference is -0.0000 with previous logl 11646.08991
    and current logl 11646.08991
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434 Maximal x difference between simplex iterations is 0.0226
      at position 143 with current x: 13.903287568726972:.5f and
      with previous x : 13.925863796246695:.5f
435 For simplex iteration number 121 :
436 Log difference is -0.0000 with previous logl 11646.08991
      and current logl 11646.08991
437 Maximal x difference between simplex iterations is 0.0167
      at position 143 with current x: 13.919994670742454:.5f and
      with previous x : 13.903287568726972:.5f
438 For simplex iteration number 122 :
439 Log difference is -0.0000 with previous logl 11646.08991
      and current logl 11646.08990
440 Maximal x difference between simplex iterations is 0.0183
      at position 191 with current x: -9.617421306842587:.5f and
      with previous x : -9.59916266749755:.5f
441 For simplex iteration number 123 :
442 Log difference is -0.0000 with previous logl 11646.08990
      and current logl 11646.08990
443 Maximal x difference between simplex iterations is 0.0150
      at position 191 with current x: -9.602383624855138:.5f and
      with previous x : -9.617421306842587:.5f
444 For simplex iteration number 124 :
445 Log difference is -0.0000 with previous logl 11646.08990
      and current logl 11646.08990
446 Maximal x difference between simplex iterations is 0.0165
      at position 144 with current x: 13.376387843095365:.5f and
      with previous x : 13.392869825923597:.5f
447 For simplex iteration number 125 :
448 Log difference is -0.0000 with previous logl 11646.08990
      and current logl 11646.08988
449 Maximal x difference between simplex iterations is 0.0195
      at position 144 with current x: 13.395921728072945:.5f and
      with previous x : 13.376387843095365:.5f
450 For simplex iteration number 126 :
451 Log difference is -0.0000 with previous logl 11646.08988
      and current logl 11646.08988
452 Maximal x difference between simplex iterations is 0.0698
      at position 80 with current x: -15.847442090282563:.5f and
      with previous x : -15.917228868957157:.5f
453 For simplex iteration number 127 :
454 Log difference is -0.0000 with previous logl 11646.08988
      and current logl 11646.08988
455 Maximal x difference between simplex iterations is 0.0787
      at position 80 with current x: -15.926108097618737:.5f and
      with previous x : -15.847442090282563:.5f
456 For simplex iteration number 128 :
```

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457 Log difference is -0.0000 with previous logl 11646.08988
    and current logl 11646.08988
458 Maximal x difference between simplex iterations is 0.0246
    at position 73 with current x: 3.1050847990353447:.5f and
    with previous x : 3.0804928870396355:.5f
459 For simplex iteration number 129 :
460 Log difference is -0.0000 with previous logl 11646.08988
    and current logl 11646.08986
461 Maximal x difference between simplex iterations is 0.0233
    at position 73 with current x: 3.081818811711167:.5f and
    with previous x : 3.1050847990353447:.5f
462 For simplex iteration number 130 :
463 Log difference is -0.0000 with previous logl 11646.08986
    and current logl 11646.08986
464 Maximal x difference between simplex iterations is 0.0171
    at position 191 with current x: -9.611001413182187:.5f and
    with previous x : -9.593943109715845:.5f
465 For simplex iteration number 131 :
466 Log difference is -0.0000 with previous logl 11646.08986
    and current logl 11646.08986
467 Maximal x difference between simplex iterations is 0.0153
    at position 190 with current x: -9.893181252104302:.5f and
    with previous x : -9.9085115961606:.5f
468 For simplex iteration number 132 :
469 Log difference is -0.0000 with previous logl 11646.08986
    and current logl 11646.08985
470 Maximal x difference between simplex iterations is 0.0122
    at position 186 with current x: -7.132783823978079:.5f and
    with previous x : -7.120547079705462:.5f
471 For simplex iteration number 133 :
472 Log difference is -0.0000 with previous logl 11646.08985
    and current logl 11646.08985
473 Maximal x difference between simplex iterations is 0.0376
    at position 49 with current x: 16.89478677138998:.5f and
    with previous x : 16.932386836707543:.5f
474 For simplex iteration number 134 :
475 Log difference is -0.0000 with previous logl 11646.08985
    and current logl 11646.08983
476 Maximal x difference between simplex iterations is 0.0345
    at position 49 with current x: 16.9293283976395:.5f and
    with previous x : 16.89478677138998:.5f
477 For simplex iteration number 135 :
478 Log difference is -0.0000 with previous logl 11646.08983
    and current logl 11646.08983
479 Maximal x difference between simplex iterations is 0.0246
    at position 177 with current x: -6.318362575394273:.5f and
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479 with previous x : -6.342976598044653:.5f
480 For simplex iteration number 136 :
481 Log difference is -0.0000 with previous logl 11646.08983
    and current logl 11646.08983
482 Maximal x difference between simplex iterations is 0.0136
    at position 190 with current x: -9.907568174775692:.5f and
    with previous x : -9.893987066261538:.5f
483 For simplex iteration number 137 :
484 Log difference is -0.0000 with previous logl 11646.08983
    and current logl 11646.08983
485 Maximal x difference between simplex iterations is 0.0142
    at position 141 with current x: 17.004032470636695:.5f and
    with previous x : 16.989855725831326:.5f
486 For simplex iteration number 138 :
487 Log difference is -0.0000 with previous logl 11646.08983
    and current logl 11646.08982
488 Maximal x difference between simplex iterations is 0.0269
    at position 141 with current x: 16.977175231056286:.5f and
    with previous x : 17.004032470636695:.5f
489 For simplex iteration number 139 :
490 Log difference is -0.0000 with previous logl 11646.08982
    and current logl 11646.08981
491 Maximal x difference between simplex iterations is 0.0181
    at position 141 with current x: 16.995322312769115:.5f and
    with previous x : 16.977175231056286:.5f
492 For simplex iteration number 140 :
493 Log difference is -0.0000 with previous logl 11646.08981
    and current logl 11646.08981
494 Maximal x difference between simplex iterations is 0.0232
    at position 144 with current x: 13.371209361829797:.5f and
    with previous x : 13.394387151770642:.5f
495 For simplex iteration number 141 :
496 Log difference is -0.0000 with previous logl 11646.08981
    and current logl 11646.08981
497 Maximal x difference between simplex iterations is 0.0627
    at position 168 with current x: -13.044085281239653:.5f
    and with previous x : -13.10680027536447:.5f
498 For simplex iteration number 142 :
499 Log difference is -0.0000 with previous logl 11646.08981
    and current logl 11646.08981
500 Maximal x difference between simplex iterations is 0.0632
    at position 168 with current x: -13.107241885602203:.5f
    and with previous x : -13.044085281239653:.5f
501 For simplex iteration number 143 :
502 Log difference is -0.0000 with previous logl 11646.08981
    and current logl 11646.08980
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503 Maximal x difference between simplex iterations is 0.0240
      at position 143 with current x: 13.936226563007615:.5f and
      with previous x : 13.912251800153644:.5f
504 For simplex iteration number 144 :
505 Log difference is -0.0000 with previous logl 11646.08980
      and current logl 11646.08980
506 Maximal x difference between simplex iterations is 0.0616
      at position 49 with current x: 16.874610740107727:.5f and
      with previous x : 16.936163342127415:.5f
507 For simplex iteration number 145 :
508 Log difference is -0.0000 with previous logl 11646.08980
      and current logl 11646.08978
509 Maximal x difference between simplex iterations is 0.0490
      at position 49 with current x: 16.923637550238432:.5f and
      with previous x : 16.874610740107727:.5f
510 For simplex iteration number 146 :
511 Log difference is -0.0000 with previous logl 11646.08978
      and current logl 11646.08978
512 Maximal x difference between simplex iterations is 0.0271
      at position 25 with current x: 22.207974902639595:.5f and
      with previous x : 22.1808682855997:.5f
513 For simplex iteration number 147 :
514 Log difference is -0.0000 with previous logl 11646.08978
      and current logl 11646.08978
515 Maximal x difference between simplex iterations is 0.0174
      at position 25 with current x: 22.190544775726547:.5f and
      with previous x : 22.207974902639595:.5f
516 For simplex iteration number 148 :
517 Log difference is -0.0000 with previous logl 11646.08978
      and current logl 11646.08977
518 Maximal x difference between simplex iterations is 0.0205
      at position 173 with current x: -7.2875169772269786:.5f
      and with previous x : -7.308047607193343:.5f
519 For simplex iteration number 149 :
520 Log difference is -0.0000 with previous logl 11646.08977
      and current logl 11646.08977
521 Maximal x difference between simplex iterations is 0.0190
      at position 168 with current x: -13.092466540426745:.5f
      and with previous x : -13.111480551846018:.5f
522 For simplex iteration number 150 :
523 Log difference is -0.0000 with previous logl 11646.08977
      and current logl 11646.08976
524 Maximal x difference between simplex iterations is 0.0223
      at position 62 with current x: 2.251427500334748:.5f and
      with previous x : 2.2290859947216646:.5f
525 For simplex iteration number 151 :
```

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526 Log difference is -0.0000 with previous logl 11646.08976
      and current logl 11646.08976
527 Maximal x difference between simplex iterations is 0.0203
      at position 140 with current x: 15.81449124155735:.5f and
      with previous x : 15.834799820535677:.5f
528 For simplex iteration number 152 :
529 Log difference is -0.0000 with previous logl 11646.08976
      and current logl 11646.08975
530 Maximal x difference between simplex iterations is 0.0155
      at position 173 with current x: -7.293405176274641:.5f and
      with previous x : -7.308915146667925:.5f
531 For simplex iteration number 153 :
532 Log difference is -0.0000 with previous logl 11646.08975
      and current logl 11646.08974
533 Maximal x difference between simplex iterations is 0.0720
      at position 173 with current x: -7.3654150672418925:.5f
      and with previous x : -7.293405176274641:.5f
534 For simplex iteration number 154 :
535 Log difference is -0.0000 with previous logl 11646.08974
      and current logl 11646.08974
536 Maximal x difference between simplex iterations is 0.0674
      at position 173 with current x: -7.297994636154763:.5f and
      with previous x : -7.3654150672418925:.5f
537 For simplex iteration number 155 :
538 Log difference is -0.0000 with previous logl 11646.08974
      and current logl 11646.08974
539 Maximal x difference between simplex iterations is 0.0201
      at position 143 with current x: 13.907474364313082:.5f and
      with previous x : 13.927528641729252:.5f
540 For simplex iteration number 156 :
541 Log difference is -0.0000 with previous logl 11646.08974
      and current logl 11646.08973
542 Maximal x difference between simplex iterations is 0.0162
      at position 54 with current x: 15.196763856718372:.5f and
      with previous x : 15.180517958799044:.5f
543 For simplex iteration number 157 :
544 Log difference is -0.0000 with previous logl 11646.08973
      and current logl 11646.08972
545 Maximal x difference between simplex iterations is 0.0218
      at position 141 with current x: 16.978572338402337:.5f and
      with previous x : 17.000417924932655:.5f
546 For simplex iteration number 158 :
547 Log difference is -0.0000 with previous logl 11646.08972
      and current logl 11646.08972
548 Maximal x difference between simplex iterations is 0.0161
      at position 185 with current x: -10.593077299915553:.5f
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548 and with previous x : -10.609204777752305:.5f
549 For simplex iteration number 159 :
550 Log difference is -0.0000 with previous logl 11646.08972
    and current logl 11646.08971
551 Maximal x difference between simplex iterations is 0.0150
    at position 23 with current x: 26.244141632135268:.5f and
    with previous x : 26.259092853517302:.5f
552 For simplex iteration number 160 :
553 Log difference is -0.0000 with previous logl 11646.08971
    and current logl 11646.08970
554 Maximal x difference between simplex iterations is 0.0133
    at position 144 with current x: 13.380324056435175:.5f and
    with previous x : 13.393625906541276:.5f
555 For simplex iteration number 161 :
556 Log difference is -0.0000 with previous logl 11646.08970
    and current logl 11646.08970
557 Maximal x difference between simplex iterations is 0.0176
    at position 15 with current x: -1.402784281313442:.5f and
    with previous x : -1.4203856438642193:.5f
558 For simplex iteration number 162 :
559 Log difference is -0.0000 with previous logl 11646.08970
    and current logl 11646.08970
560 Maximal x difference between simplex iterations is 0.0118
    at position 140 with current x: 15.827543485643153:.5f and
    with previous x : 15.815735792544537:.5f
561 For simplex iteration number 163 :
562 Log difference is -0.0000 with previous logl 11646.08970
    and current logl 11646.08968
563 Maximal x difference between simplex iterations is 0.0156
    at position 186 with current x: -7.109526903943161:.5f and
    with previous x : -7.125081541369988:.5f
564 For simplex iteration number 164 :
565 Log difference is -0.0000 with previous logl 11646.08968
    and current logl 11646.08968
566 Maximal x difference between simplex iterations is 0.0256
    at position 144 with current x: 13.396911892609761:.5f and
    with previous x : 13.371291818330235:.5f
567 For simplex iteration number 165 :
568 Log difference is -0.0000 with previous logl 11646.08968
    and current logl 11646.08966
569 Maximal x difference between simplex iterations is 0.0180
    at position 187 with current x: -18.849354381717674:.5f
    and with previous x : -18.86736664776447:.5f
570 For simplex iteration number 166 :
571 Log difference is -0.0000 with previous logl 11646.08966
    and current logl 11646.08966
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572 Maximal x difference between simplex iterations is 0.0199  
at position 173 with current x: -7.315565803683043:.5f and  
with previous x : -7.295616064667845:.5f

573 For simplex iteration number 167 :

574 Log difference is -0.0000 with previous logl 11646.08966  
and current logl 11646.08964

575 Maximal x difference between simplex iterations is 0.0135  
at position 141 with current x: 16.98986759500943:.5f and  
with previous x : 17.003383721371957:.5f

576 For simplex iteration number 168 :

577 Log difference is -0.0000 with previous logl 11646.08964  
and current logl 11646.08964

578 Maximal x difference between simplex iterations is 0.0150  
at position 191 with current x: -9.59114296353399:.5f and  
with previous x : -9.606155904114717:.5f

579 For simplex iteration number 169 :

580 Log difference is -0.0000 with previous logl 11646.08964  
and current logl 11646.08963

581 Maximal x difference between simplex iterations is 0.0185  
at position 187 with current x: -18.8686416866015:.5f and  
with previous x : -18.850149742152084:.5f

582 For simplex iteration number 170 :

583 Log difference is -0.0000 with previous logl 11646.08963  
and current logl 11646.08963

584 Maximal x difference between simplex iterations is 0.0287  
at position 89 with current x: 2.6334704872492853:.5f and  
with previous x : 2.6047946177538357:.5f

585 For simplex iteration number 171 :

586 Log difference is -0.0000 with previous logl 11646.08963  
and current logl 11646.08962

587 Maximal x difference between simplex iterations is 0.0265  
at position 89 with current x: 2.606979461269893:.5f and  
with previous x : 2.6334704872492853:.5f

588 For simplex iteration number 172 :

589 Log difference is -0.0000 with previous logl 11646.08962  
and current logl 11646.08962

590 Maximal x difference between simplex iterations is 0.0177  
at position 177 with current x: -6.299259797727777:.5f and  
with previous x : -6.316974719597951:.5f

591 For simplex iteration number 173 :

592 Log difference is -0.0000 with previous logl 11646.08962  
and current logl 11646.08962

593 Maximal x difference between simplex iterations is 0.0289  
at position 187 with current x: -18.86908216063329:.5f and  
with previous x : -18.840143050280204:.5f

594 For simplex iteration number 174 :

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595 Log difference is -0.0000 with previous logl 11646.08962  
and current logl 11646.08962  
596 Maximal x difference between simplex iterations is 0.0225  
at position 173 with current x: -7.301610796512089:.5f and  
with previous x : -7.279127207100627:.5f  
597 For simplex iteration number 175 :  
598 Log difference is -0.0000 with previous logl 11646.08962  
and current logl 11646.08962  
599 Maximal x difference between simplex iterations is 0.0247  
at position 186 with current x: -7.115573123544012:.5f and  
with previous x : -7.140319549736356:.5f  
600 For simplex iteration number 176 :  
601 Log difference is -0.0000 with previous logl 11646.08962  
and current logl 11646.08961  
602 Maximal x difference between simplex iterations is 0.0176  
at position 177 with current x: -6.336197984375344:.5f and  
with previous x : -6.318586392940607:.5f  
603 For simplex iteration number 177 :  
604 Log difference is -0.0000 with previous logl 11646.08961  
and current logl 11646.08961  
605 Maximal x difference between simplex iterations is 0.0242  
at position 144 with current x: 13.375298558223978:.5f and  
with previous x : 13.399532422277131:.5f  
606 For simplex iteration number 178 :  
607 Log difference is -0.0000 with previous logl 11646.08961  
and current logl 11646.08961  
608 Maximal x difference between simplex iterations is 0.0211  
at position 168 with current x: -13.118733826591228:.5f  
and with previous x : -13.097662359031336:.5f  
609 For simplex iteration number 179 :  
610 Log difference is -0.0000 with previous logl 11646.08961  
and current logl 11646.08960  
611 Maximal x difference between simplex iterations is 0.0164  
at position 80 with current x: -15.908956704995763:.5f and  
with previous x : -15.92536561898944:.5f  
612 For simplex iteration number 180 :  
613 Log difference is -0.0000 with previous logl 11646.08960  
and current logl 11646.08960  
614 Maximal x difference between simplex iterations is 0.0183  
at position 144 with current x: 13.380669340559063:.5f and  
with previous x : 13.398961380067853:.5f  
615 For simplex iteration number 181 :  
616 Log difference is -0.0000 with previous logl 11646.08960  
and current logl 11646.08960  
617 Maximal x difference between simplex iterations is 0.0164  
at position 186 with current x: -7.132930321472328:.5f and
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617 with previous x : -7.116553179732895:.5f
618 For simplex iteration number 182 :
619 Log difference is -0.0000 with previous logl 11646.08960
and current logl 11646.08960
620 Maximal x difference between simplex iterations is 0.0149
at position 140 with current x: 15.818097229797225:.5f and
with previous x : 15.833030489609705:.5f
621 For simplex iteration number 183 :
622 Log difference is -0.0000 with previous logl 11646.08960
and current logl 11646.08959
623 Maximal x difference between simplex iterations is 0.0256
at position 49 with current x: 16.944491122700555:.5f and
with previous x : 16.918892730257028:.5f
624 For simplex iteration number 184 :
625 Log difference is -0.0000 with previous logl 11646.08959
and current logl 11646.08958
626 Maximal x difference between simplex iterations is 0.0175
at position 49 with current x: 16.92701699772827:.5f and
with previous x : 16.944491122700555:.5f
627 For simplex iteration number 185 :
628 Log difference is -0.0000 with previous logl 11646.08958
and current logl 11646.08957
629 Maximal x difference between simplex iterations is 0.0175
at position 23 with current x: 26.230973306491528:.5f and
with previous x : 26.24850577103391:.5f
630 For simplex iteration number 186 :
631 Log difference is -0.0000 with previous logl 11646.08957
and current logl 11646.08956
632 Maximal x difference between simplex iterations is 0.0210
at position 143 with current x: 13.927965151504063:.5f and
with previous x : 13.906960552376795:.5f
633 For simplex iteration number 187 :
634 Log difference is -0.0000 with previous logl 11646.08956
and current logl 11646.08954
635 Maximal x difference between simplex iterations is 0.0095
at position 168 with current x: -13.103965982921109:.5f
and with previous x : -13.113423275067635:.5f
636 For simplex iteration number 188 :
637 Log difference is -0.0000 with previous logl 11646.08954
and current logl 11646.08953
638 Maximal x difference between simplex iterations is 0.0124
at position 191 with current x: -9.613626850403552:.5f and
with previous x : -9.601203736175767:.5f
639 For simplex iteration number 189 :
640 Log difference is -0.0000 with previous logl 11646.08953
and current logl 11646.08953
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641 Maximal x difference between simplex iterations is 0.0144  
at position 23 with current x: 26.234463263122166:.5f and  
with previous x : 26.248912560094343:.5f

642 For simplex iteration number 190 :

643 Log difference is -0.0000 with previous logl 11646.08953  
and current logl 11646.08953

644 Maximal x difference between simplex iterations is 0.0119  
at position 168 with current x: -13.11828341515924:.5f and  
with previous x : -13.106419904107266:.5f

645 For simplex iteration number 191 :

646 Log difference is -0.0000 with previous logl 11646.08953  
and current logl 11646.08952

647 Maximal x difference between simplex iterations is 0.0118  
at position 187 with current x: -18.856021385586008:.5f  
and with previous x : -18.867835301184257:.5f

648 For simplex iteration number 192 :

649 Log difference is -0.0000 with previous logl 11646.08952  
and current logl 11646.08952

650 Maximal x difference between simplex iterations is 0.0147  
at position 173 with current x: -7.288943721056445:.5f and  
with previous x : -7.303593754668053:.5f

651 For simplex iteration number 193 :

652 Log difference is -0.0000 with previous logl 11646.08952  
and current logl 11646.08951

653 Maximal x difference between simplex iterations is 0.0176  
at position 173 with current x: -7.306548190512366:.5f and  
with previous x : -7.288943721056445:.5f

654 For simplex iteration number 194 :

655 Log difference is -0.0000 with previous logl 11646.08951  
and current logl 11646.08950

656 Maximal x difference between simplex iterations is 0.0146  
at position 23 with current x: 26.235045456556172:.5f and  
with previous x : 26.249653362971543:.5f

657 For simplex iteration number 195 :

658 Log difference is -0.0000 with previous logl 11646.08950  
and current logl 11646.08949

659 Maximal x difference between simplex iterations is 0.0176  
at position 186 with current x: -7.127354892331478:.5f and  
with previous x : -7.109791366011437:.5f

660 For simplex iteration number 196 :

661 Log difference is -0.0000 with previous logl 11646.08949  
and current logl 11646.08947

662 Maximal x difference between simplex iterations is 0.0169  
at position 173 with current x: -7.312283283089728:.5f and  
with previous x : -7.295352182653778:.5f

663 For simplex iteration number 197 :

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664 Log difference is -0.0000 with previous logl 11646.08947
    and current logl 11646.08945
665 Maximal x difference between simplex iterations is 0.0149
    at position 187 with current x: -18.850374626705587:.5f
    and with previous x : -18.865307921950734:.5f
666 For simplex iteration number 198 :
667 Log difference is -0.0000 with previous logl 11646.08945
    and current logl 11646.08943
668 Maximal x difference between simplex iterations is 0.0181
    at position 140 with current x: 15.809293211613419:.5f and
    with previous x : 15.827413083461611:.5f
669 For simplex iteration number 199 :
670 Log difference is -0.0000 with previous logl 11646.08943
    and current logl 11646.08942
671 Maximal x difference between simplex iterations is 0.0164
    at position 187 with current x: -18.860614465132834:.5f
    and with previous x : -18.844183382172304:.5f
672 For simplex iteration number 200 :
673 Log difference is -0.0001 with previous logl 11646.08942
    and current logl 11646.08935
674 Maximal x difference between simplex iterations is 0.0333
    at position 177 with current x: -6.289086069484856:.5f and
    with previous x : -6.322344561513317:.5f
675
676 10 largest Differences in logl according to simplex
    before termination:
677 [0.00080927 0.00080955 0.00080962 0.00081018 0.00081073 0
    .00081456
678 0.00082525 0.00082679 0.00083097 0.00084664]
679
680 10 largest Differences in logl according to simplex at
    termination:
681 [0.00088372 0.00088401 0.00088407 0.00088463 0.00088518 0
    .00088901
682 0.0008997 0.00090124 0.00090542 0.00092109]
683
684 10 largest Differences in x according to simplex before
    termination:
685 [0.0581967 0.05830986 0.06216036 0.06909775 0.0719901 0
    .07705425
686 0.0776938 0.10116227 0.10865855 0.11996744]
687
688 10 largest Differences in x according to simplex at
    termination:
689 [0.05947634 0.05953438 0.05984126 0.06128442 0.06523731 0
    .07540006
```

```
690 0.08127499 0.08203544 0.08960839 0.09265049]
691 Finished iteration 0, duration M step 0:24:12
692 [ 1.55715124e+00 -5.21094934e-01 -8.98154189e-01 6.
36474097e-05
693 -1.63343413e-02 -3.04636171e-02 -2.95917591e-13 -2.
00438717e+00
694 2.60197635e+00 2.49020937e-02 2.09913829e-03 -6.
42425980e-05
695 -1.90918596e-04 -4.66065913e-01 1.05536434e-03 -1.
40768519e+00
696 -1.72082105e-04 -3.92730835e-04 1.13702066e-07 3.
16636491e+00
697 -8.04830239e-03 1.86531347e-06 -5.42139417e-02 2.
62068958e+01
698 6.80195903e-03 2.21799585e+01 -4.29564657e-10 6.
37269141e+00
699 -1.14640779e+00 3.31675408e-01 -1.61767466e-03 2.
97555923e+00
700 8.24426730e-14 1.37670555e+00 -2.92606069e+00 1.
72242002e-01
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725	2.86556180e-04	9.54914739e-06	9.69155468e-07	9.	
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733	1.86021615e-05	-1.42931634e-06	3.12579356e-05	-1.	
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