File - SSGA

```
/Users/meijiaojiao/opt/anaconda3/envs/RunToEnd/bin/python /Users/meijiaojiao/Desktop/Evolution_algorithm/stuck in local minima/SSGA/SSGA.py
[['iterations', 'mutation_rate', 'num_individuals', 'crossover_probability', 'Mutation_type', 'Crossover_type', 'R']]
2022-11-20 19:52:58
Parameter Combination is [[1000000, 2.0, 100, 0.5, 'Normal', 'Probabilistic_crossover', 0.1]]
Now testing Function21
Times is 0
Iter at 1998,  best solution is -2.67862E+00,  optima is -10.1532,  similarity is 1.19104E+01,   phenotype is [6.000803799881571, 6.015638902421777, 6.002348135053878, 6.020978156561519]
Iter at 3998,  best solution is -2.68272E+00,  optima is -10.1532,  similarity is 3.95668E+00,   phenotype is [6.000803799881571, 6.001049071114348, 6.002348135053878, 5.9980012663936835]
Iter at 5998,  best solution is -2.68272E+00,  optima is -10.1532,  similarity is 1.21374E+00,   phenotype is [6.000803799881571, 6.001049071114348, 6.002348135053878, 5.9980012663936835]
Iter at 7998,  best solution is -2.68272E+00,  optima is -10.1532,  similarity is 7.35370E-01,   phenotype is [6.000803799881571, 6.001049071114348, 6.002348135053878, 5.9980012663936835]
Iter at 9998,  best solution is -2.68272E+00,  optima is -10.1532,  similarity is 1.29252E+00,   phenotype is [5.996738099118325, 6.001049071114348, 6.002348135053878, 5.9980012663936835]
Iter at 11998,  best solution is -2.68274E+00,  optima is -10.1532,  similarity is 1.73593E-01,  phenotype is [6.000763513993029, 5.999931464538292, 6.002348135053878, 5.998871695532657]
Iter at 13998,  best solution is -2.68274E+00,  optima is -10.1532,  similarity is 2.34819E+00,  phenotype is [6.000763513993029, 5.999931464538292, 6.002348135053878, 5.998871695532657]
Iter at 15998,  best solution is -2.68274E+00,  optima is -10.1532,  similarity is 2.35778E+00,  phenotype is [6.000763513993029, 5.999931464538292, 6.002348135053878, 5.998871695532657]
Iter at 17998,  best solution is -2.68274E+00,  optima is -10.1532,  similarity is 1.06948E-01,  phenotype is [6.000763513993029, 5.999931464538292, 6.002348135053878, 5.998871695532657]
Iter at 19998,  best solution is -2.68277E+00,  optima is -10.1532,  similarity is 2.69046E+00,  phenotype is [5.99839819520886, 5.999931464538292, 6.002348135053878, 5.998871695532657]
Iter at 21998,  best solution is -2.68277E+00,  optima is -10.1532,  similarity is 1.83385E-01,  phenotype is [5.99839819520886, 5.999931464538292, 6.002348135053878, 5.998871695532657]
Iter at 23998,  best solution is -2.68277E+00,  optima is -10.1532,  similarity is 2.81849E+00,  phenotype is [5.9986399416993255, 5.999931464538292, 6.002348135053878, 5.998871695532657]
Iter at 25998,  best solution is -2.68277E+00,  optima is -10.1532,  similarity is 1.60097E+00,  phenotype is [5.9986399416993255, 5.999931464538292, 6.002348135053878, 5.998871695532657]
Iter at 27998,  best solution is -2.68278E+00,  optima is -10.1532,  similarity is 1.59681E+00,  phenotype is [5.9986399416993255, 5.999931464538292, 5.995444372140801, 5.998871695532657]
Iter at 29998,  best solution is -2.68278E+00,  optima is -10.1532,  similarity is 1.71165E+00,  phenotype is [5.9986399416993255, 5.999931464538292, 5.995444372140801, 5.998871695532657]
Iter at 31998,  best solution is -2.68278E+00,  optima is -10.1532,  similarity is 2.02889E+00,  phenotype is [5.9986399416993255, 5.999931464538292, 5.995444372140801, 5.998871695532657]
Iter at 33998,  best solution is -2.68278E+00,  optima is -10.1532,  similarity is 7.32509E-01,  phenotype is [5.9986399416993255, 5.999931464538292, 5.995444372140801, 5.998871695532657]
Iter at 35998,  best solution is -2.68278E+00,  optima is -10.1532,  similarity is 1.93946E+00,  phenotype is [5.9986399416993255, 5.999931464538292, 5.995444372140801, 5.998871695532657]
Iter at 37998,  best solution is -2.68278E+00,  optima is -10.1532,  similarity is 1.71100E+00,  phenotype is [5.9986399416993255, 5.999931464538292, 5.995444372140801, 5.998871695532657]
Iter at 39998,  best solution is -2.68278E+00,  optima is -10.1532,  similarity is 1.70216E+00,  phenotype is [5.9986399416993255, 5.999931464538292, 5.995444372140801, 5.998871695532657]
Iter at 41998,  best solution is -2.68278E+00,  optima is -10.1532,  similarity is 1.73918E+00,  phenotype is [5.9986399416993255, 5.999931464538292, 5.995444372140801, 5.998871695532657]
Iter at 43998,  best solution is -2.68278E+00,  optima is -10.1532,  similarity is 2.84143E+00,  phenotype is [5.9986399416993255, 5.999931464538292, 5.995444372140801, 5.998871695532657]
Iter at 45998,  best solution is -2.68279E+00,  optima is -10.1532,  similarity is 5.50803E-01,  phenotype is [5.9986399416993255, 5.999931464538292, 5.995444372140801, 6.000706851586204]
Iter at 47998,  best solution is -2.68279E+00,  optima is -10.1532,  similarity is 9.97423E-01,  phenotype is [5.9986399416993255, 5.999931464538292, 5.995444372140801, 6.000706851586204]
Iter at 49998,  best solution is -2.68279E+00,  optima is -10.1532,  similarity is 1.50059E+00,  phenotype is [5.9986399416993255, 5.999931464538292, 5.995444372140801, 6.000706851586204]
Iter at 51998,  best solution is -2.68279E+00,  optima is -10.1532,  similarity is 1.61664E+00,  phenotype is [5.9986399416993255, 5.999931464538292, 5.995444372140801, 6.000706851586204]
Iter at 53998,  best solution is -2.68279E+00,  optima is -10.1532,  similarity is 1.52922E+00,  phenotype is [5.9986399416993255, 5.999931464538292, 5.995444372140801, 6.000706851586204]
Iter at 55998,  best solution is -2.68279E+00,  optima is -10.1532,  similarity is 1.05222E+00,  phenotype is [5.9986399416993255, 5.999931464538292, 5.995444372140801, 6.000706851586204]
Iter at 57998,  best solution is -2.68279E+00,  optima is -10.1532,  similarity is 2.47649E+00,  phenotype is [5.9986399416993255, 5.999931464538292, 5.995444372140801, 6.000706851586204]
Iter at 59998,  best solution is -2.68279E+00,  optima is -10.1532,  similarity is 5.39725E-01,  phenotype is [5.9986399416993255, 5.999931464538292, 5.995444372140801, 6.000706851586204]
Iter at 61998,  best solution is -2.68279E+00,  optima is -10.1532,  similarity is 4.79030E-01,  phenotype is [5.9986399416993255, 5.999931464538292, 5.995444372140801, 6.000706851586204]
Iter at 63998,  best solution is -2.68279E+00,  optima is -10.1532,  similarity is 1.32465E+00,  phenotype is [5.9986399416993255, 5.999931464538292, 5.995444372140801, 6.000706851586204]
Iter at 65998,  best solution is -2.68279E+00,  optima is -10.1532,  similarity is 4.52168E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.995444372140801, 6.000706851586204]
Iter at 67998,  best solution is -2.68279E+00,  optima is -10.1532,  similarity is 0.00000E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.995444372140801, 6.000706851586204]
Iter at 69998,  best solution is -2.68281E+00,  optima is -10.1532,  similarity is 2.86209E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.995811477341997, 6.000706851586204]
Iter at 71998,  best solution is -2.68281E+00,  optima is -10.1532,  similarity is 2.54992E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.995811477341997, 6.000706851586204]
Iter at 73998,  best solution is -2.68281E+00,  optima is -10.1532,  similarity is 1.44911E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.995811477341997, 6.000706851586204]
Iter at 75998,  best solution is -2.68281E+00,  optima is -10.1532,  similarity is 4.75671E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.995811477341997, 6.000706851586204]
Iter at 77998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.64111E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 6.000706851586204]
Iter at 79998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.70062E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 6.000706851586204]
Iter at 81998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 5.78107E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 6.000706851586204]
Iter at 83998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.04593E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 6.000706851586204]
Iter at 85998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.91730E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 6.000706851586204]
Iter at 87998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 7.24087E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 6.000706851586204]
Iter at 89998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.59723E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 5.99994265574113]
Iter at 91998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.71908E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 5.99994265574113]
Iter at 93998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 8.34580E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 5.99994265574113]
Iter at 95998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.46623E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 5.99994265574113]
```

```
 55 Iter at 97998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.50195E-02,   phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 5.99994265574113]
 56 Iter at 99998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.28491E+00,   phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 5.99994265574113]
 57 Iter at 101998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 5.92156E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 5.99994265574113]
 58 Iter at 103998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 5.07511E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 5.99994265574113]
 59 Iter at 105998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.83025E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 5.99994265574113]
 60 Iter at 107998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 8.20963E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 5.99994265574113]
 61 Iter at 109998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.49299E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 5.99994265574113]
 62 Iter at 111998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 6.68007E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 5.99994265574113]
 63 Iter at 113998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 6.08041E-02,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 5.99994265574113]
 64 Iter at 115998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 0.00000E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 5.99994265574113]
 65 Iter at 117998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.21237E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 5.99994265574113]
 66 Iter at 119998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.18601E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 5.99994265574113]
 67 Iter at 121998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.77808E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 5.99994265574113]
 68 Iter at 123998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.43845E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 5.99994265574113]
 69 Iter at 125998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 7.57997E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 5.99994265574113]
 70 Iter at 127998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.26302E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 5.99994265574113]
 71 Iter at 129998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.62468E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 5.99994265574113]
 72 Iter at 131998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.71564E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 5.99994265574113]
 73 Iter at 133998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.38086E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 5.99994265574113]
 74 Iter at 135998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 6.32724E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 5.99994265574113]
 75 Iter at 137998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.19365E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 5.99994265574113]
 76 Iter at 139998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 4.76836E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 5.99994265574113]
 77 Iter at 141998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 8.03989E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 5.99994265574113]
 78 Iter at 143998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.63422E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 5.99994265574113]
 79 Iter at 145998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.28604E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 5.99994265574113]
 80 Iter at 147998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.37051E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 5.99994265574113]
 81 Iter at 149998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.66013E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 5.99994265574113]
 82 Iter at 151998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.23552E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 6.00018197448914]
 83 Iter at 153998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.18957E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 6.00018197448914]
 84 Iter at 155998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 4.11665E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 6.00018197448914]
 85 Iter at 157998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.17941E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 6.00018197448914]
 86 Iter at 159998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 9.65105E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 6.00018197448914]
 87 Iter at 161998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 9.13001E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 6.00018197448914]
 88 Iter at 163998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.45589E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 6.00018197448914]
 89 Iter at 165998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.54085E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 6.00018197448914]
 90 Iter at 167998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 9.51291E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 6.00018197448914]
 91 Iter at 169998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 4.22778E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 6.00018197448914]
 92 Iter at 171998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.12701E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 6.00018197448914]
 93 Iter at 173998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.37447E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 6.00018197448914]
 94 Iter at 175998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.18039E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 6.00018197448914]
 95 Iter at 177998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.13893E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 6.00018197448914]
 96 Iter at 179998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.22297E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 6.00018197448914]
 97 Iter at 181998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.02922E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 6.00018197448914]
 98 Iter at 183998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 9.59925E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 6.00018197448914]
 99 Iter at 185998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.21344E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 6.00018197448914]
100 Iter at 187998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.68986E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 6.00018197448914]
101 Iter at 189998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 6.45476E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 6.00018197448914]
102 Iter at 191998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.26050E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 6.000358761710157]
103 Iter at 193998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.33107E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998623031499745, 6.000358761710157]
104 Iter at 195998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.11475E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
105 Iter at 197998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.13293E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
106 Iter at 199998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 6.52842E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
107 Iter at 201998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.00084E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
108 Iter at 203998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.06444E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
```

```
109 Iter at 205998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 3.89689E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
110 Iter at 207998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.30563E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
111 Iter at 209998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.49913E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
112 Iter at 211998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.37788E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
113 Iter at 213998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.06812E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
114 Iter at 215998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 0.00000E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
115 Iter at 217998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 0.00000E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
116 Iter at 219998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.34607E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
117 Iter at 221998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.28019E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
118 Iter at 223998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.45855E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
119 Iter at 225998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 6.82766E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
120 Iter at 227998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.01889E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
121 Iter at 229998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.32660E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
122 Iter at 231998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 5.44226E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
123 Iter at 233998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.23131E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
124 Iter at 235998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.46380E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
125 Iter at 237998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.40903E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
126 Iter at 239998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.54839E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
127 Iter at 241998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.77852E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
128 Iter at 243998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.35418E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
129 Iter at 245998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.17547E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
130 Iter at 247998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 7.40937E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
131 Iter at 249998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 6.85227E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
132 Iter at 251998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.94722E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
133 Iter at 253998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.74593E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
134 Iter at 255998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.42950E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
135 Iter at 257998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 7.80092E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
136 Iter at 259998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.21565E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
137 Iter at 261998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.31851E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
138 Iter at 263998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 9.04225E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
139 Iter at 265998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 6.23125E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
140 Iter at 267998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.11689E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
141 Iter at 269998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 9.29098E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
142 Iter at 271998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.82307E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
143 Iter at 273998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.40408E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
144 Iter at 275998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.15719E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
145 Iter at 277998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.60507E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
146 Iter at 279998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.27899E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
147 Iter at 281998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.65511E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
148 Iter at 283998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 6.30484E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
149 Iter at 285998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 7.61686E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
150 Iter at 287998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.84178E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
151 Iter at 289998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 6.79725E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
152 Iter at 291998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.71389E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
153 Iter at 293998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 4.54242E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
154 Iter at 295998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.08774E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
155 Iter at 297998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 9.34549E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
156 Iter at 299998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.07505E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
157 Iter at 301998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 9.12898E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
158 Iter at 303998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 8.88510E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
159 Iter at 305998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 7.90619E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
160 Iter at 307998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.62198E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
161 Iter at 309998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.84116E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
162 Iter at 311998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.23731E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
```

```
163 Iter at 313998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 3.97176E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
164 Iter at 315998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 3.97812E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
165 Iter at 317998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 0.00000E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
166 Iter at 319998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.01261E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
167 Iter at 321998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 7.44179E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
168 Iter at 323998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 3.08438E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
169 Iter at 325998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 4.90559E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
170 Iter at 327998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 7.95269E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
171 Iter at 329998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.55569E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
172 Iter at 331998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.24287E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
173 Iter at 333998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 8.23244E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
174 Iter at 335998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.53851E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
175 Iter at 337998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.78221E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
176 Iter at 339998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.02406E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
177 Iter at 341998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 0.00000E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
178 Iter at 343998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.01238E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
179 Iter at 345998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 0.00000E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
180 Iter at 347998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.18790E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
181 Iter at 349998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 8.90432E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
182 Iter at 351998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 3.60731E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
183 Iter at 353998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 0.00000E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
184 Iter at 355998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.84080E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
185 Iter at 357998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.34940E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
186 Iter at 359998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 9.91412E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
187 Iter at 361998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.90570E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
188 Iter at 363998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.73925E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
189 Iter at 365998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.11727E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
190 Iter at 367998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 7.01420E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
191 Iter at 369998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 3.15910E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
192 Iter at 371998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 0.00000E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
193 Iter at 373998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 9.58395E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
194 Iter at 375998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.68851E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
195 Iter at 377998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 3.00066E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
196 Iter at 379998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 4.27781E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
197 Iter at 381998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.08294E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
198 Iter at 383998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.57294E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
199 Iter at 385998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.27117E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
200 Iter at 387998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.96306E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
201 Iter at 389998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 9.54050E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
202 Iter at 391998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.13986E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
203 Iter at 393998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.23063E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
204 Iter at 395998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.06351E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
205 Iter at 397998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.43359E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
206 Iter at 399998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 8.70179E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
207 Iter at 401998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 4.64700E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
208 Iter at 403998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.13847E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
209 Iter at 405998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.25041E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
210 Iter at 407998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 9.24457E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
211 Iter at 409998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 9.74690E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
212 Iter at 411998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.16052E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
213 Iter at 413998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.35966E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
214 Iter at 415998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 4.53062E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
215 Iter at 417998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 6.91738E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
216 Iter at 419998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 9.32148E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
```

```
217 Iter at 421998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.20044E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
218 Iter at 423998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 3.61363E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
219 Iter at 425998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.83965E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
220 Iter at 427998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.34257E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
221 Iter at 429998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 3.49874E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
222 Iter at 431998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.72705E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
223 Iter at 433998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.90079E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
224 Iter at 435998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 7.70270E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
225 Iter at 437998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.35537E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
226 Iter at 439998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 0.00000E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
227 Iter at 441998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.12883E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
228 Iter at 443998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.72423E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
229 Iter at 445998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.82645E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
230 Iter at 447998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.36990E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
231 Iter at 449998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.30110E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
232 Iter at 451998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.60330E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
233 Iter at 453998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 7.12111E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
234 Iter at 455998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.80691E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
235 Iter at 457998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.31387E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
236 Iter at 459998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.73996E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
237 Iter at 461998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 5.10997E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
238 Iter at 463998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 7.36838E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
239 Iter at 465998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 7.27982E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
240 Iter at 467998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.44267E-02,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
241 Iter at 469998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 0.00000E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
242 Iter at 471998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 0.00000E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
243 Iter at 473998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.90348E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
244 Iter at 475998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.57191E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998824071226323, 6.000358761710157]
245 Iter at 477998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.16748E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000358761710157]
246 Iter at 479998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.92065E-03,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
247 Iter at 481998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.52829E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
248 Iter at 483998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 9.80431E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
249 Iter at 485998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.85071E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
250 Iter at 487998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.54670E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
251 Iter at 489998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.44786E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
252 Iter at 491998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.23981E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
253 Iter at 493998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 8.81526E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
254 Iter at 495998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.64405E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
255 Iter at 497998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.01819E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
256 Iter at 499998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.34480E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
257 Iter at 501998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.55249E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
258 Iter at 503998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.40434E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
259 Iter at 505998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.47315E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
260 Iter at 507998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 8.23313E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
261 Iter at 509998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 4.36809E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
262 Iter at 511998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.67236E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
263 Iter at 513998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 9.74334E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
264 Iter at 515998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.45276E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
265 Iter at 517998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.17241E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
266 Iter at 519998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 9.70956E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
267 Iter at 521998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.29233E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
268 Iter at 523998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.91680E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
269 Iter at 525998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.56264E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
270 Iter at 527998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.75775E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
```

```
271 Iter at 529998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 9.89250E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
272 Iter at 531998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.10572E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
273 Iter at 533998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 3.05601E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
274 Iter at 535998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.46835E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
275 Iter at 537998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.73044E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
276 Iter at 539998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.03828E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
277 Iter at 541998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.77337E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
278 Iter at 543998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 4.60316E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
279 Iter at 545998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 9.35690E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
280 Iter at 547998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 6.58553E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
281 Iter at 549998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 9.09780E-02,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
282 Iter at 551998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 0.00000E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
283 Iter at 553998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 9.90888E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
284 Iter at 555998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 8.74471E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
285 Iter at 557998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.99348E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
286 Iter at 559998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.51128E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
287 Iter at 561998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 7.83740E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
288 Iter at 563998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.80919E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
289 Iter at 565998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 8.43477E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
290 Iter at 567998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 3.84312E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
291 Iter at 569998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.43895E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
292 Iter at 571998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.10025E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
293 Iter at 573998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 9.53719E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
294 Iter at 575998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 0.00000E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
295 Iter at 577998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 9.49974E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
296 Iter at 579998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.32779E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
297 Iter at 581998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.31825E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
298 Iter at 583998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.63680E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
299 Iter at 585998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.53444E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
300 Iter at 587998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.43878E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
301 Iter at 589998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.02022E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
302 Iter at 591998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.21738E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
303 Iter at 593998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.47638E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
304 Iter at 595998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.10828E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
305 Iter at 597998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 7.35417E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
306 Iter at 599998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.52116E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
307 Iter at 601998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 9.18541E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
308 Iter at 603998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 0.00000E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
309 Iter at 605998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 7.80793E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
310 Iter at 607998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 9.22564E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
311 Iter at 609998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 7.79177E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
312 Iter at 611998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.76060E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
313 Iter at 613998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.81410E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
314 Iter at 615998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 9.14720E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
315 Iter at 617998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.92484E-02,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
316 Iter at 619998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 0.00000E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
317 Iter at 621998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 5.17850E-01,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
318 Iter at 623998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 0.00000E+00,  phenotype is [5.9986399416993255, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
319 Iter at 625998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.67388E+00,  phenotype is [5.998709509903295, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
320 Iter at 627998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.75673E+00,  phenotype is [5.998709509903295, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
321 Iter at 629998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.03272E+00,  phenotype is [5.998709509903295, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
322 Iter at 631998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.81561E-02,  phenotype is [5.998709509903295, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
323 Iter at 633998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.20316E+00,  phenotype is [5.998709509903295, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
324 Iter at 635998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.11104E+00,  phenotype is [5.998709509903295, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
```

```
325 Iter at 637998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.43095E+00,  phenotype is [5.998709509903295, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
326 Iter at 639998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.19364E+00,  phenotype is [5.998709509903295, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
327 Iter at 641998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 7.19378E-01,  phenotype is [5.998709509903295, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
328 Iter at 643998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 3.88607E-01,  phenotype is [5.998709509903295, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
329 Iter at 645998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 9.24716E-01,  phenotype is [5.998709509903295, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
330 Iter at 647998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 3.19051E+00,  phenotype is [5.998709509903295, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
331 Iter at 649998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.94901E+00,  phenotype is [5.998709509903295, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
332 Iter at 651998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.42794E+00,  phenotype is [5.998709509903295, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
333 Iter at 653998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.46624E+00,  phenotype is [5.998709509903295, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
334 Iter at 655998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 3.09677E+00,  phenotype is [5.998709509903295, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
335 Iter at 657998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 7.93087E-01,  phenotype is [5.998709509903295, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
336 Iter at 659998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.54743E+00,  phenotype is [5.998709509903295, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
337 Iter at 661998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.96896E+00,  phenotype is [5.998709509903295, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
338 Iter at 663998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.21613E+00,  phenotype is [5.998709509903295, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
339 Iter at 665998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 3.26304E-01,  phenotype is [5.998709509903295, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
340 Iter at 667998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.75824E+00,  phenotype is [5.998709509903295, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
341 Iter at 669998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.09036E-01,  phenotype is [5.998709509903295, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
342 Iter at 671998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.68440E+00,  phenotype is [5.998709509903295, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
343 Iter at 673998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.40599E+00,  phenotype is [5.998709509903295, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
344 Iter at 675998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 3.41034E-03,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
345 Iter at 677998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.36383E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
346 Iter at 679998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.00872E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
347 Iter at 681998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.87608E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
348 Iter at 683998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 4.17245E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
349 Iter at 685998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.23550E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
350 Iter at 687998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 0.00000E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
351 Iter at 689998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 9.73274E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
352 Iter at 691998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.50960E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
353 Iter at 693998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 4.31864E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
354 Iter at 695998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.07791E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
355 Iter at 697998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.02638E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
356 Iter at 699998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 9.13424E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
357 Iter at 701998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.57234E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
358 Iter at 703998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.28460E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
359 Iter at 705998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 4.46152E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
360 Iter at 707998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.13562E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
361 Iter at 709998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.60753E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
362 Iter at 711998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 3.99582E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
363 Iter at 713998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 7.58177E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
364 Iter at 715998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 9.21100E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
365 Iter at 717998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 0.00000E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
366 Iter at 719998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 7.61156E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
367 Iter at 721998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 9.54644E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
368 Iter at 723998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 8.58815E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
369 Iter at 725998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.18737E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
370 Iter at 727998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.59901E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
371 Iter at 729998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 0.00000E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
372 Iter at 731998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.88192E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
373 Iter at 733998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.24459E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
374 Iter at 735998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 0.00000E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
375 Iter at 737998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.04850E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
376 Iter at 739998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 9.47145E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
377 Iter at 741998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.78940E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
378 Iter at 743998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.09678E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
```

```
379 Iter at 745998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 0.00000E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
380 Iter at 747998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 3.66764E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
381 Iter at 749998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 7.99261E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
382 Iter at 751998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.82481E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
383 Iter at 753998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 9.68290E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
384 Iter at 755998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.49467E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
385 Iter at 757998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.70825E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
386 Iter at 759998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.00101E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
387 Iter at 761998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.00597E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
388 Iter at 763998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 3.15531E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
389 Iter at 765998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 6.93575E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
390 Iter at 767998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 6.14984E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
391 Iter at 769998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.80781E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
392 Iter at 771998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 4.79882E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
393 Iter at 773998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 8.71781E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
394 Iter at 775998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 7.51992E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
395 Iter at 777998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 9.26316E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
396 Iter at 779998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 4.08755E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
397 Iter at 781998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.12541E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
398 Iter at 783998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 0.00000E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
399 Iter at 785998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.08350E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
400 Iter at 787998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.15406E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
401 Iter at 789998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.65555E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
402 Iter at 791998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.17556E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
403 Iter at 793998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.57630E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
404 Iter at 795998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 0.00000E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
405 Iter at 797998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 9.16255E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
406 Iter at 799998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.32274E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
407 Iter at 801998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.47004E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
408 Iter at 803998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 6.77685E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
409 Iter at 805998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 0.00000E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
410 Iter at 807998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 3.42587E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
411 Iter at 809998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 5.64075E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
412 Iter at 811998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.80444E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
413 Iter at 813998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 4.57053E-02,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
414 Iter at 815998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.09250E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
415 Iter at 817998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 3.35300E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
416 Iter at 819998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 8.62908E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
417 Iter at 821998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.33327E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
418 Iter at 823998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 6.76727E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
419 Iter at 825998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 9.35786E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
420 Iter at 827998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.43530E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
421 Iter at 829998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.56408E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
422 Iter at 831998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.46643E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
423 Iter at 833998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.18824E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
424 Iter at 835998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.97893E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
425 Iter at 837998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 4.42459E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
426 Iter at 839998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.78026E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
427 Iter at 841998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.12020E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
428 Iter at 843998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.98592E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
429 Iter at 845998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 0.00000E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
430 Iter at 847998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.10969E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
431 Iter at 849998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 7.65708E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
432 Iter at 851998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.39808E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
```

```
433 Iter at 853998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 7.81876E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
434 Iter at 855998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.04860E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
435 Iter at 857998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.62736E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
436 Iter at 859998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.84739E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
437 Iter at 861998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.56116E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
438 Iter at 863998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 4.92014E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
439 Iter at 865998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 9.36051E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
440 Iter at 867998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.01500E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
441 Iter at 869998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.14824E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
442 Iter at 871998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 5.36394E-02,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
443 Iter at 873998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.20718E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
444 Iter at 875998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.28795E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
445 Iter at 877998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.84396E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
446 Iter at 879998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 6.03059E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
447 Iter at 881998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 9.82366E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
448 Iter at 883998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 6.63408E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
449 Iter at 885998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 8.57469E-02,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
450 Iter at 887998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.82318E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
451 Iter at 889998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 5.31329E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
452 Iter at 891998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 8.84608E-02,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
453 Iter at 893998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 5.98572E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
454 Iter at 895998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.63783E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
455 Iter at 897998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.32014E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
456 Iter at 899998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.27456E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
457 Iter at 901998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.44354E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
458 Iter at 903998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 8.34369E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
459 Iter at 905998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 6.38714E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
460 Iter at 907998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 8.18441E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
461 Iter at 909998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.38158E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
462 Iter at 911998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.91290E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
463 Iter at 913998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 3.03090E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
464 Iter at 915998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.36977E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
465 Iter at 917998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 8.57696E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
466 Iter at 919998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 3.27594E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
467 Iter at 921998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 0.00000E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
468 Iter at 923998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 7.71943E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
469 Iter at 925998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.65870E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
470 Iter at 927998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.32731E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
471 Iter at 929998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.35705E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
472 Iter at 931998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 0.00000E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
473 Iter at 933998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 7.57901E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
474 Iter at 935998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.23496E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
475 Iter at 937998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.84773E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
476 Iter at 939998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 8.61837E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
477 Iter at 941998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 6.31957E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
478 Iter at 943998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 4.42608E-02,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
479 Iter at 945998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.59980E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
480 Iter at 947998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.20486E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
481 Iter at 949998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 4.95275E-02,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
482 Iter at 951998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.60654E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
483 Iter at 953998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.84927E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
484 Iter at 955998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 0.00000E+00,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
485 Iter at 957998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 7.85129E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
486 Iter at 959998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.10129E-01,  phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
```

```
487 Iter at 961998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.04412E+00,   phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
488 Iter at 963998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 8.09943E-01,   phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
489 Iter at 965998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.21665E+00,   phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
490 Iter at 967998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.10749E+00,   phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
491 Iter at 969998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 6.45484E-01,   phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
492 Iter at 971998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.28586E+00,   phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
493 Iter at 973998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.82672E+00,   phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
494 Iter at 975998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.66142E+00,   phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
495 Iter at 977998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.09655E+00,   phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
496 Iter at 979998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.04288E-01,   phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
497 Iter at 981998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 2.44841E+00,   phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
498 Iter at 983998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.88964E+00,   phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
499 Iter at 985998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.08175E+00,   phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
500 Iter at 987998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 6.02272E-01,   phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
501 Iter at 989998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 7.51705E-01,   phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
502 Iter at 991998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 7.60009E-01,   phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
503 Iter at 993998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.02012E+00,   phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
504 Iter at 995998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.79807E+00,   phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
505 Iter at 997998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.08255E+00,   phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
506 Iter at 999998,  best solution is -2.68286E+00,  optima is -10.1532,  similarity is 1.78763E+00,   phenotype is [5.998756226895171, 6.0003037953666025, 5.998779621539034, 6.000318748189303]
507
508 Process finished with exit code 0
509
```