All code has been saved to <https://github.com/space-pagan/UMSL5320P2> for the convenience of the grader, as there are multiple files.

The output of initializing with multi\_run = 30, distribution method = RWS, sample method = proportional sampling, crossover method = single point, and mutation method = gaussian is:

Total evaluations: 491

Total evaluations: 491

Total evaluations: 491

Total evaluations: 491

Total evaluations: 491

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Total evaluations: 491

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Total evaluations: 491

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['-0.114', '0.654', '-0.908'] 1.266

['-0.191', '1.068', '0.758'] 1.751

['-0.220', '0.004', '-0.499'] 0.297

['-0.467', '-0.893', '1.237'] 2.544

['-0.073', '1.223', '0.405'] 1.665

['-0.878', '1.109', '0.344'] 2.118

['-0.029', '-0.083', '0.311'] 0.104

['0.426', '1.262', '-0.346'] 1.893

['-0.583', '0.873', '0.391'] 1.255

['0.776', '0.241', '-0.876'] 1.427

['0.046', '1.944', '0.688'] 4.254

['-0.275', '0.238', '1.478'] 2.318

['-0.102', '1.256', '-0.428'] 1.772

['2.190', '1.402', '0.460'] 6.974

['2.105', '-0.894', '1.997'] 9.221

['0.661', '-0.654', '0.590'] 1.213

['-0.987', '1.038', '0.118'] 2.066

['0.301', '2.161', '-0.912'] 5.591

['-0.005', '0.034', '0.011'] 0.001

['-0.518', '0.023', '-0.159'] 0.294

['0.263', '0.497', '1.088'] 1.499

['-0.816', '-0.747', '-0.153'] 1.247

['1.395', '0.771', '0.650'] 2.962

['-0.286', '0.497', '0.447'] 0.528

['-0.028', '0.951', '2.060'] 5.147

['0.200', '-0.328', '-0.462'] 0.360

['-0.239', '0.395', '0.511'] 0.474

['0.002', '0.005', '0.004'] 0.000

['-0.553', '0.175', '-0.236'] 0.392

['0.121', '-0.814', '0.678'] 1.138

Average of BORs is 2.059034826406782

Standard Deviation of BORs is 2.1370897823636708

The output of initializing with multi\_run = 30, distribution method = truncation (keep top 8), sample method = tournament, crossover method = arithmetic (a=0.3), and mutation method = uniform random is:

Total evaluations: 491

Total evaluations: 491

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Total evaluations: 491

Total evaluations: 491

Total evaluations: 491

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Total evaluations: 491

Total evaluations: 491

Total evaluations: 491

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Total evaluations: 491

['0.334', '-0.340', '0.117'] 0.241

['0.206', '-0.075', '0.174'] 0.078

['0.262', '0.202', '-0.289'] 0.193

['0.179', '0.274', '-0.331'] 0.217

['0.073', '0.015', '-0.257'] 0.072

['-0.192', '0.296', '-0.147'] 0.146

['-0.026', '-0.094', '-0.491'] 0.251

['0.114', '0.174', '0.028'] 0.044

['-0.056', '0.343', '0.091'] 0.129

['-0.177', '0.208', '-0.254'] 0.139

['0.330', '0.019', '0.241'] 0.167

['0.057', '0.363', '0.001'] 0.135

['-0.327', '0.623', '0.030'] 0.496

['0.648', '-0.155', '-0.045'] 0.446

['0.245', '0.242', '0.039'] 0.120

['0.061', '-0.044', '-0.119'] 0.020

['-0.135', '-0.287', '0.212'] 0.145

['0.215', '-0.578', '0.121'] 0.395

['0.194', '-0.382', '0.004'] 0.184

['-0.153', '0.224', '-0.200'] 0.114

['0.006', '-0.101', '-0.140'] 0.030

['-0.377', '-0.124', '0.071'] 0.163

['0.188', '0.008', '0.080'] 0.042

['-0.193', '0.109', '-0.331'] 0.159

['0.063', '-0.413', '0.213'] 0.219

['0.343', '-0.083', '-0.033'] 0.125

['0.345', '-0.363', '-0.117'] 0.264

['0.165', '-0.076', '0.574'] 0.363

['0.272', '-0.004', '0.120'] 0.088

['-0.153', '0.438', '-0.085'] 0.222

Average of BORs is 0.18023269263930167

Standard Deviation of BORs is 0.11659104178577184