*Output from MATLAB Code for Part II:*

This program attempts to find all global mins for the three functions assigned.

First function:

Trying to find a global minimum of the 1st function.

Best value obtained from iterative line search -1.762709e+02.

Starting local minimization at coordinates (-5.100000e-01, -1.130000e+00).

Function stopped because alpha reduced below allowed value and no improvement found.

Best location found after steepest descent from optimal point found by iterative line search is:

(-4.919171e-01,-1.113962e+00).

The function value here is -1.775524e+02, and the Euclid. norm of the gradient here is 5.565223e-01.

Trying to find all global mins of the 1st function.

Found all candidates, now searching locally.

The candidates for the global mins are shown below (possibly repeats): [x,y,funcVal,Grad].

GlobalMins =

-1.1000 -0.4900 -178.3238 0.0940

-0.4900 -1.1000 -177.5524 0.5958

Second function:

Trying to find a global minimum of the 2nd function.

Best value obtained from iterative line search -1.774430e+02.

Starting local minimization at coordinates (-6.790000e+00, -1.130000e+00).

Best location found after steepest descent from optimal point found by iterative line search is:

(-6.774576e+00,-1.114100e+00).

The function value here is -1.785191e+02, and the Euclid. norm of the gradient here is 9.981555e-04.

Trying to find all global mins of the 2nd function.

Found all candidates, now searching locally.

The candidates for the global mins are shown below (possibly repeats): [x,y,funcVal,Grad].

GlobalMins =

-7.4000 -6.8000 -178.5191 0.0008

-7.4000 -0.4900 -178.5191 0.0008

-7.4000 5.8000 -178.5191 0.0010

-6.8000 -7.4000 -178.5191 0.0008

-6.8000 -1.1000 -178.5191 0.0008

-6.8000 5.2000 -178.5191 0.0008

-1.1000 -6.8000 -178.5191 0.0008

-1.1000 -0.4900 -178.5191 0.0010

-1.1000 5.8000 -178.5191 0.0009

-0.4900 -7.4000 -178.5191 0.0008

-0.4900 -1.1000 -178.5191 0.0010

-0.4900 5.2000 -178.5191 0.0010

5.2000 -6.8000 -178.5191 0.0008

5.2000 -0.4900 -178.5191 0.0010

5.2000 5.8000 -178.5191 0.0008

5.8000 -7.4000 -178.5191 0.0010

5.8000 -1.1000 -178.5191 0.0010

5.8000 5.2000 -178.5191 0.0008

Third function:

Trying to find a global minimum of the 3rd function.

Best value obtained from iterative line search -9.995245e-01.

Starting local minimization at coordinates (3.120000e+00, 3.120000e+00).

Best location found after steepest descent from optimal point found by iterative line search is:

(3.140884e+00,3.140884e+00).

The function value here is -9.999995e-01, and the Euclid. norm of the gradient here is 9.826440e-04.

Trying to find all global mins of the 3rd function.

Found all candidates, now searching locally.

The candidates for the global mins are shown below (possibly repeats): [x,y,funcVal,Grad].

GlobalMins =

3.1000 3.1000 -1.0000 0.0010

The total number of gradient vectors computed in this process was 6665.

No Hessians were harmed in the computation of these minima.

Elapsed time is 43.547887 seconds.