

Steepest descent assignment [15 MARKS]

Write a Matlab script for the steepest descent method and call it 'Steepest_descent'

(i) Test it on the function $f(\underline{x}) = 4x_1^2 + x_2^2 - x_1^2x_2$, using $x^0 = [1\ 1]^T$ as an initial estimate.

(ii) iterate to convergence using the stopping criteria $\|\nabla F(x^k)\| \leq 10^{-5}$.

(iii) Tabulate your results, i.e $\{x^{(k)}\}$

[10]

(iv) Plot $\{x^{(k)}\}$ against the contours of the function to illustrate the convergence of your algorithm.

[5]