ASSIGNMENT – 3a

Find the global minimum point and value for the function $f(x) = 3x^2 + 5e^{-y}+10$

- Do manual calculations for two iterations

Iteration 1:

Let, x=1, y=2 and $\eta = 0.01$

At x=1, df(x,y)/dx | x=1=6(1)=6

At y=2, df(x,y)/dy|y=2=5*e^{-2} = -5*0.135 = -0.676

Δ x = -0.01*6 = -0.06 and Δ y = -0.01 * -0.676 = 0.00676 x=1-

0.06=0.94 and y=2+0.00676=2.00676 = ~2.007

This procedure repeats until gradient is near to zero and next iteration x=0.94 and y=2.007.

Iteration 2:

At x=0.94, df(x,y)/dx | x=.94=6(.94)=5.64

At y=2.007, df(x,y)/dy|y=2.007 = -5*0.134 = -0.671

Δ x = -0.01*5.64 = -0.056 and Δ y = -0.01 * -.671 = 0.00671 x=0.94-

0.056=0.88 and y=2.007+0.00671=2.014

This procedure repeats until gradient is near to zero and next iteration x=0.88 and y=2.014.