

Assignment-3

• Manual calculation for $f(x,y) = 3x^2 + 5e^{-y} + 10$

Iteration-1

• choose initial value for x, y and η let
 $x=2, y=2$ and $\eta=0.001$.

• Gradient at $x=2, \Rightarrow 6x=12$

• Gradient at $y=2, \Rightarrow -5e^{-2} = -0.67667$.

$$\Delta x = -0.001 \times 12 \quad \Delta y = -0.001 \times -0.67667$$
$$= -0.012 \quad = 6.7667 \times 10^{-4}$$

$$x = 2 - 0.012 = 1.98$$

$$y = 2 + 6.7667 \times 10^{-4} = 2.000676$$

Iteration-2

Gradient at $x=1.988 \Rightarrow 1.988 \times 2 = 11.928$

Gradient at $y=2.000676 = 0.676219$.

$$\Delta x = -0.001 \times 11.928$$
$$= -0.011928$$

$$x = 1.988 - 0.011928$$

$$x = 1.9760$$

$$\Delta y = -0.001 \times -0.676219$$
$$= 6.76219 \times 10^{-4}$$

$$y = 2.000676 + 6.762 \times 10^{-4}$$
$$= 2.0013436$$