

## Assignment - II

②  $f(x) = x^4 + 3x^2 + 10$

Step 1: initialization

$$x = 1, \text{epoch} = 2, \eta = 0.2$$

Iteration 1:-

$$\frac{\partial f}{\partial x} = 4x^3 + 6x = 10$$

$$\Delta x = -\eta \frac{\partial f}{\partial x} = -(0.2)(10) = -2$$

$$x = x + \Delta x = 1 - 2 = -1, \quad x = -1$$

Iteration 2 :-

$$\frac{\partial f}{\partial x} = 4x^3 + 6x = -10$$

$$\Delta x = -\eta \frac{\partial f}{\partial x} = -(0.2)(-10) = 2$$

$$x = x + \Delta x = -1 + 2 = 1$$