

## Assignment - 2

$$f(x) = x^4 + 3x^2 + 10$$

Iteration-1:-

Let  $x=3$  and  $\eta=0.01$

$$\begin{aligned} & 4x^3 + 6x \\ &= 4(3)^3 + 6(3) \\ &= 108 + 18 \\ &= 126 \end{aligned}$$

$$\begin{aligned} \Delta x &= 0.01 \times 126 \\ &= 1.26 \end{aligned}$$

update  $x$  value as  $x = 3 - 1.26$   
 $= 1.74$

Iteration-2:-

$$x = 1.74$$

$$\begin{aligned} & 4x^3 + 6x \\ & 4(1.74)^3 + 6(1.74) \\ &= 4 \times 5.268 + 10.44 \\ &= 31.512 \end{aligned}$$

$$\Delta x = 0.01 \times 31.512 = 0.315$$

update  $x$  value as

$$\begin{aligned} x &= 1.74 - 0.315 \\ &= 1.425 \end{aligned}$$