

$$x^4 + 3x^3 + 10$$

Iteration-1

let  $x = 2$  and  $\eta = 0.01$

$$\begin{aligned} 4x^3 + 6x &= 4(2)^3 + 6(2) \\ &= 32 + 12 \\ &= 44 \end{aligned}$$

As gradient is not near to zero, calculating step length.

$$\begin{aligned} \Delta x &= -0.01 * 44 \\ &= -0.44 \end{aligned}$$

$$\text{update } x = 2 - 0.44 = 1.56$$

Iteration-2

$$\begin{aligned} &= 4(1.5)^3 + 6(1.5) \\ &= 13.5 + 9 \\ &= 22.5 \end{aligned}$$

$$\Delta x = -0.01 * 22.5 = -0.225$$

$$\text{update } x = 1.5 - 0.225 = 1.275$$