

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

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

Iteration - 1

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

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

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

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

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