

Assignment $\Rightarrow 2$

Do manual calculation upto two iterations

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

Iterations

① :-

$$x = 2 \quad \text{and} \quad \eta = 0.01$$

$$x^4 + 3x^2 + 10$$

$$4x^3 + 6x + 10$$

$$4(2)^3 + 6(2)$$

$$\Rightarrow 32 + 12$$

$$\Rightarrow 44$$

$$\Delta x = 0.01 \times 44$$

$$= -0.44$$

$$\text{Now } x \text{ value} \Rightarrow x = 2 - 0.44$$

$$= 1.56 //$$

② :-

$$\text{Take } x = 1.56$$

$$4x^3 + 6x$$

$$\Rightarrow 4(1.56)^3 + 6(1.56)$$

$$4 \times 3.796 + 6 \times 1.56$$

$$\Rightarrow 24.544$$

$$\Delta x_1 = 0.01 \times 24.544 = 0.24544$$

$$\text{Now } x \text{ value} \Rightarrow x = 1.56 - 0.24544$$

$$\Rightarrow 1.31456 //$$