

Assignment - 2.

a) Do manual calculation for two iterations.

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

Iteration - 1:-

let $x = 2$ and $n = 0.01$

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

$$4x^3 + 6x + 0$$

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

$$32 + 12$$

$$= 44$$

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

$$= 0.44$$

update x value as $x = 2 - 0.44$
 $= 1.56$

Iteration - 2:-

$$x = 1.56$$

$$4x^3 + 6x$$

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

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

$$15.184 + 9.36$$

$$= 24.544$$

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

update x value as $x = 1.56 - 0.24544$
 $= 1.31456$