Iteration-1

Find the minimum value of $f(x) = x^4 + 3x^2 + 10$

Let $x = 2$ and $\eta = 0.02$

$$\frac{\partial f(x)}{x} = 4 \times x^3 + 6 \times x$$

$$= 4 \times 2^3 + 6 \times 2$$

$$= 44 \Rightarrow \text{Step length} = -0.01 \times 44 = 0.44$$

$$\therefore x = 2 - 0.44$$

$$= 1.56$$

Iteration-2

let $x = 1.56$ and $\eta = 0.02$

$$\frac{\partial f(x)}{x}\Big/_{x=1.56} = 4*(1.56)^3 + 6 \times 1.56$$

$$= 24.5456644$$

Step length $= -0.01 \times 24.5456644$

$$= -0.2454566$$

$$\therefore x = 1.56 - 0.2454566$$

$$= 1.3145434336$$