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

Step-1. Initialise variable (x)

$x = 2, \eta = 0.1, epox = 3, itr = 1$

Step-2: Calculate slope

$$\frac{df}{dx} = 4x^3 + 6x = 4(2)^3 + 6(2) = 44$$

Step.3: Find the change in var value

$$\Delta x = -\eta \frac{df}{dx}$$

$$\Delta x = -0.1(44) = -4.4$$

Step-4: Update variable

$x = x + \Delta x$.

$x = 2 + (-4.4) = -2.2$

Step-5: $itr = itr + 1 = 1 + 1 = 2$

Step-6: if $(itr > epox)$

goto next step

else

goto step-2

Step-2: $x = -2.2, \eta = 0.1, epox = 3, itr = 2$

Step-3:
$$\frac{df}{dx} = 4x^3 + 6x = 4(-2.2)^3 + 6(-2.2)$$
$$= -55.7$$

$$\Delta x = -\eta \frac{df}{dx}$$
$$= -(0.1)(-55.7)$$

$$\Delta x = 5.57$$

Step-4: $x = x + \Delta x$

$x = -2.2 + 5.57$

$x = 3.3$

Step-5: $ito = ito + 1 = 2 + 1 = 3$

Step-6: if $(ito > epox)$

go to next step

else

go to step-2

if $x = 1$

Step-1: $x = 1, \eta = 0.1, epox = 3, ito = 1$

Step-2: $\dfrac{\partial f}{\partial x} = 4x^3 + 6x = 4(1)^3 + 6(1) = 10$

Step-3: $\Delta x = -\eta \dfrac{\partial f}{\partial x}$

$\Delta x = -(0.1)(10) = -1$

Step-4: $x = \Delta x + x$

$x = -1 + 1 = 0$

Step-5: $itr = itr + 1 = 1 + 1 = 2$

Step-6: $(2 > 3)$ (x)

Step-2: $\dfrac{\partial f}{\partial x} = 0$

Step-3: $\Delta x = 0$

Step-4: $x = 0 + 0 = 0$