Assignment -2

a →

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

step-1 $x = x_{old}$, itr_max = 2, itr = 1

step-2

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

$m = 4x^3 + 6x$

$m = 4 + 6 = 10$

step-3

$\Delta x = -\eta \frac{\partial f}{\partial x}$

$= -0.1 \times 10 = -1$

step-4 $= x = x + \Delta x = 1 - 1 = 0$

step-5

itr = itr + 1 = 1 + 1 = 2

step-6

if (itr > itr_max)

2 > 2

false → step-2

step-2

$\frac{\partial f}{\partial x} = 4x^3 + 6x = 0$

step-3

$\Delta x = -\eta \frac{\partial x}{\partial x} = 0$

Step-4

$x = x + \Delta x = 0 + 0 = 0$

Step-5

itr = itr + 1 = 2 + 1 = 3

Step-6

if (itr > itr_max)

True → next step.

step-7

print x, f(x).