\*\*\*\*\*\*\*\*\*ITERATION-1\*\*\*\*\*\*\*\*\*\*

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

let x=2 and eta=0.01

df(x)/dx=4x^3+6x = 4(8)+12 = 44

delta x=-0.01\*44 = -0.44

updated x = 2-0.04

=1.56

\*\*\*\*\*\*\*\*ITERATION-2\*\*\*\*\*\*\*\*\*\*\*

now x=1.56 and eta=0.01

df(x)/dx=4x^3+6x = 4(1.56)^3+6(1.56) = 24.545

delta x=-0.01\*24.545 = -0.245

updated x = 1.56-0.245

=1.31

\*\*\*\*\*\*\*\*PYTHON CODE\*\*\*\*\*\*\*\*\*\*

x\_o=2

eta=0.01

eps=0.000001

del\_x=1

max\_iters=1000

iters=0

y,z=0,0

def deriv(x):

y=x\*\*3

z=4\*y+6\*x

return z

while abs(del\_x)>eps and iters < max\_iters:

prev\_x = x\_o

del\_x=-eta\*deriv(prev\_x)

x\_o=del\_x

iters+=1

print("Iteration",iters,"\n X value is",x\_o)

print("The local minimun occurs at",x\_o)