**MODIFIED SECANT METHOD**

*#This Program Estimates a Root using Modified Secant Method*

**from pandas import DataFrame**

**import math**

**XI,XO,FXI,FXO=[],[],[],[]**

**xi=float(input('Enter Initial Guess:'))**

**e=float(input('Enter allowed error:'))**

**d=0.01**

**def f(x):**

**return math.exp(-x)-x**

**xo=xi**

**while (abs(f(xo))>e):**

**xo=xi-((d\*f(xi))/(f(xi+d)-f(xi)))**

**XI.append(xi)**

**XO.append(xo)**

**FXI.append(f(xi))**

**FXO.append(f(xo))**

**xi=xo**

**df=DataFrame({'xi':XI,'xo':XO,'f(xi)':FXI,'f(xo)':FXO})**

**print(df)**

**print('The root is',xo)**

**OUTPUT**

**Enter Initial Guess:0**

**Enter allowed error:0.00000001**

**xi xo f(xi) f(xo)**

**0 0.000000 0.501249 1.000000 1.045246e-01**

**1 0.501249 0.566465 0.104525 1.063775e-03**

**2 0.566465 0.567144 0.001064 -1.791653e-06**

**3 0.567144 0.567143 -0.000002 3.237390e-09**

**The root is 0.567143288343993**