import numpy as np

x\_o = 0.3

a = 0

b = 0

i = 0

print("Exercice 2, a):Our function is f(x)=e^2x-3x-1 with f'(x)=2e^(2x)-3")

def x\_func(x):

return x - ((np.exp(2\*x) - 3\*x - 1) /(2\*np.exp(2\*x)-3))

a = x\_func(x\_o)

print("The equation is x\_n+1 = x\_n - f(x\_n)/f'(x\_n) with the Newton-Rhapson method")

print("We iterate untill |x\_n+1- x\_n|<0.5\*10^(-12) for a 12-digit accuracy"

while (abs(b-a) > 0.5\*10\*\*(-12)):

print("x\_n=",a)

if i != 0:

a = b

b = x\_func(a)

print("x\_(n+1)=",b)

i = i + 1

print("The number of repetitions is:",i)

print("Exercise 2, b): Same method beging with x\_0=0.203 for 3 iterations")

x\_0 = 0.0203

for i in range(3):

print("x\_n=",a)

if i != 0:

a = b

b = x\_func(a)

print("x\_(n+1)=",b)

i = i + 1

print("The number of repetitions is:",i)

print("End")