import numpy as np

from numpy import \*

import math

import matplotlib.pyplot as plt

x = [0.1, 0.15, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.47, 0.5]

y = []

XX, YY, XX2, XY, a1, a0, i = 0, 0, 0, 0, 0, 0, 0

while i < len(x):

y.append(x[i] \*\*2\*sin(x[i]))

i += 1

i = 0

while i < (len(x) - 1):

XX += x[i]

YY += y[i]

XX2 += (x[i])\*\*2

XY += x[i] \* y[i]

i += 1

XX /= len(x)

YY /= len(x)

XX2 /= len(x)

XY /= len(x)

print(f'X avg = {XX}, Y avg = {YY}, XY = {XY}, XX 2 = {XX2}')

a1 = (XY - XX \* YY) / (XX2 - XX \*\* 2)

a0 = YY - a1 \* XX

print(f'A1 = {a1}, A0 = {a0}')

def F(x):

global a1, a0

f = a0 + a1 \* x

return f

xs = np.array(linspace(0, 1))

f = vectorize(F)

plt.plot(x, y, 'ro', xs, f(xs))

plt.axis([0, 1, 0, 1])

plt.scatter(x, y)

plt.xlabel('x')

plt.ylabel('y')

plt.grid()

plt.show()

