import numpy as np

import pandas as pd

import matplotlib.pyplot as plt

x = np.array([0.1, 0.15, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.47, 0.5])

y = np.array([np.e\*\*(np.cos(0.1)),np.e\*\*(np.cos(0.15)),np.e\*\*(np.cos(0.2)),np.e\*\*(np.cos(0.3)),np.e\*\*(np.cos(0.4)),np.e\*\*(np.cos(0.5)),np.e\*\*(np.cos(0.6)),np.e\*\*(np.cos(0.7)),np.e\*\*(np.cos(0.47)),np.e\*\*(np.cos(0.5))])

x1 = np.mean(x)

y1 = np.mean(y)

d = 0

n = len(x)

num = 0

for i in range(n):

  num += (x[i] - x1) \* (y[i] - y1)

  d += (x[i] - x1) \*\* 2

  m = num / d

  c = y1 - (m \* x1)

print('Coefficient: ',m, c)

plt.title('squares method')

plt.plot(x, m\*x + c)

plt.scatter(x, y)

plt.xlabel('x')

plt.ylabel('y')

plt.show()

