

nov_16_coding_prob

November 16, 2023

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[ ]: import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
from numpy import trapz

points = pd.read_excel("sampled_points(1).xlsx", engine = "openpyxl")

x = points["x"].values
y = points["y"].values

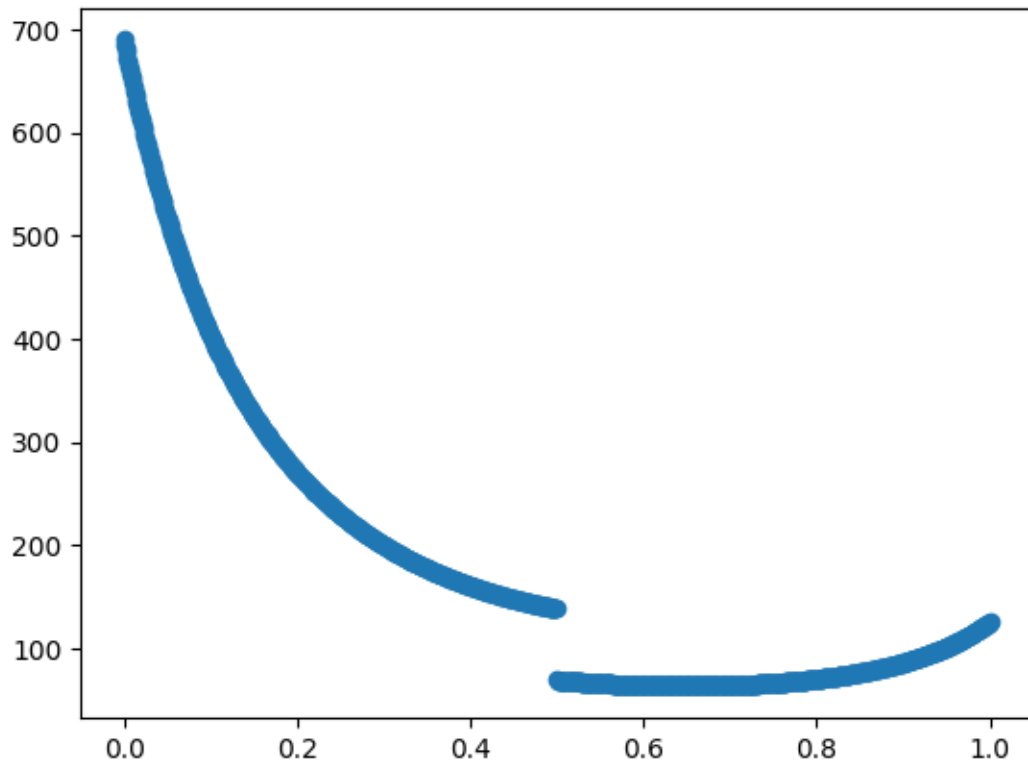
ab_stress = []
for i in range(500):
    ab_stress.append(100/(np.pi* y[i]**2))

bc_stress = []
for i in range(500, 1000):
    bc_stress.append(50/(np.pi*y[i]**2))

normal_stress = np.concatenate([ab_stress, bc_stress])

plt.scatter(x, normal_stress)
```

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[ ]: <matplotlib.collections.PathCollection at 0x12deb9250>
```



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[ ]: d1 = trapz( 100/ (70 * np.pi*y[:500]**2), dx = 0.001001)
      d2 = trapz( 50/ (70 * np.pi*y[500:]**2), dx = 0.001001)

      print("Total deformation in gigapascals is", d1+ d2)
```

Total deformation in gigapascals is 2.5589420005950148