

nov_02_coding_prob

November 8, 2023

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[ ]: import pandas as pd
import numpy as np
from numpy import trapz

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

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

area = 2*trapz(y, dx = 0.01634)

print("area in m = " , area)

mass = 10*area

print("mass in kg = " , mass)

A_top = 2*trapz(x*y, dx = 0.01634)

A = A_top/area

print("X value of the centroid in m = " , A)
print("Y value of centroid in m = 0")

alpha = np.arccos(1/1.618)

T = ((1.618 - A) * (mass * 9.8) * np.cos(alpha)) / ((1.618) * np.sin(alpha))

print("Tension in N = " , T)

area in m = 1.007199679595211
mass in kg = 10.07199679595211
X value of the centroid in m = 0.9007083852027222
Y value of centroid in m = 0
Tension in N = 34.40169432554296
```