

PAKISTAN INSTITUTE OF ENGINEERING AND APPLIED SCIENCES

DEPARTMENT OF PHYSICS AND APPLIED MATHEMATICS

ASSIGNMENT # 5, PAM-533, DUE DATE: 11/08/2021

Problem 1: The function : $\int_0^{6.9} \cos(\frac{\pi}{2}x^2)dx$ is Fresnel Cosine Integral used in optics.

Construct three functions, one for each Simple Method, Trapezoid Method and Simpson Method. Each function takes 4 parameters as arguments: an integrand expression, two limits and total number of slices. Evaluate the above integral using the three constructed methods.

For each user defined function, try it with more and with fewer slices to determine how many slices are required to give an acceptable answer within the tolerance limit of 10^{-6} .

Plot the integrand with decent enough cosmetics.

PS: Ensure compactness and clear readability of your code. Make one single .py file for all parts of the problem.

HAPPY CODING ☺