

In-class exercise 05

Write a C code to find the integrations of

$$\int_a^b (x^3 + 3x + 1) dx$$

For (a=0, b=1), (a=1, b=2), (a=2, b=3), (a=3, b=4), and (a=4, b=5). Use the trapezoid method.

For this exercise, you can simply modify the code of EX05.c

In this exercise, you will need to first read values of a and b from a file 'EX05.input.dat'. After you calculate the integrations, you will need to write data to a file 'EX05.output.dat' with the following format:

a=###, b=###, area=###

Save 2 digital numbers for a, b and area.

Formular for Trapezoid method:

$$\int_a^b f(x) dx = \frac{h}{2} \sum_{i=1}^{n-1} [f(x_i) + f(x_{i+1})]$$

where n is the number of nodes, and $h = (b - a) / (n - 1)$ is the width for each column (or the spacing between 2 neighboring nodes), x_i is the x for the i th node.

You can share your codes, questions, and bugs in the following google slides:

<https://docs.google.com/presentation/d/1-Fh5DwOrNTT7TiC4Gzd4YfiBvOPx9M0NrTL8lmnWKXY/edit?usp=sharing>