NM Lab - I

Analysis Problem

$$f(x) = ax^3 + bx^2 + cx + d$$

$a = 7$

$b = 2$

$c =$ last two digits of your roll no (21)

$d =$ last two digits of your roll no (21)

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$$I = \int_5^7 f(x)\,dx$$

Calculate the integral using

→ analytic method (I_{AM})

→ Trapezoidal Rule (I_{TR})

→ Simpson's 1/3 Rule (I_{SR})

I_{AM} → is a constant value

I_{TR} , I_{SR} → changes with 'n' (number of segments)

$$\text{Error (Trapezoid)} = |I_{AM} - I_{TR}|$$

$$\text{Error (Simpson's)} = |I_{AM} - I_{SR}|$$

Get

I_{TR} & I_{SR} for 100 values of n

→ using the codes

Plot the two graphs in excel

→ Graph One

I_{TR} Vs n
I_{SR} Vs n
I_{AM} Vs n
} plot three curves on same graph

(*) Plot n on x-axis

→ Graph two

Error (trapezoid) Vs n
Error (simpson's) Vs n
} on same graph.

(1) Plot both the graphs in two different sheets with in the same Excel file.

and also mention your inferences (2-3 lines) in the excel file

& upload the file to the assignment.

(*) For any queries message me in MS teams.