

Student's ID Number : _____ Student's Name : _____

On my Honour as a student, I have neither given nor received any unauthorized aid on this exam. Signature : _____

QUESTIONS

Download the m-file uploaded to DYS for this quiz and modify it to evaluate the following integral:

$$A = \int_0^3 (1 - e^{-2x}) dx \text{ by using}$$

1. Analytical operations (calculate the true result) (give your result with a variable named A1 in your m-file),
2. Single application of the trapezoidal rule (give your result with a variable named A2 in your m-file),
3. Multiple-application trapezoidal rule with $n=2$ (give your result with a variable named A3 in your m-file),
4. Multiple-application trapezoidal rule with $n=4$ (give your result with a variable named A4 in your m-file),
5. Single application of Simpson's 1/3 rule (give your result with a variable named A5 in your m-file),
6. Multiple application Simpson's 1/3 rule with $n=4$ (give your result with a variable named A6 in your m-file),
7. Single application of Simpson's 3/8 rule (give your result with a variable named A7 in your m-file),
8. Multiple application Simpson's 3/8 rule with $n=5$ (give your result with a variable named A8 in your m-file),
9. Use "integral" command of MATLAB for numerical integration (give your result with a variable named A9 in your m-file). *Hint:* Type >>help integral in command window
10. Use "quad" command of MATLAB for numerical integration (give your result with a variable named A10 in your m-file). *Hint:* Type >>help quad in command window
11. Calculate the percent relative true errors for each case above and make a table to express errors with a variable named Atable in your m-file.

Method asked in question	2	3	4	5	6	7	8	9	10
Relative true error (%)									


Atable

Which method has the minimum error?