

Date:

Assignment # 7

Degree / Syndicate: _____ NAME: _____ REGISTRATION No: _____

NOTE: Submission is required for questions 1 and 2

Q. 1 Estimate the integral $\int_0^1 \frac{1}{\sqrt{2\pi}} e^{\frac{-x^2}{2}} dx$ using six sub-intervals in the Trapezoidal rule

Q. 2 The solid of revolution obtained by rotating the region under the curve $y = f(x)$, $a \leq x \leq b$, about the x-axis has the surface area given by $Area = a\pi \int_a^b f(x) \sqrt{1 + f'(x)} dx$. Find the area using

$$f(x) = x \cos x \quad 1 \leq x \leq 2.$$

- a) Use the Rectangular rule with six subintervals.
- b) Use Trapezoidal rule with six subintervals.
- c) Use Simpson's rule with six subintervals.

Q. 3 Perform the Integration for the following in order to find area under the curve over an interval $[0, 10]$ with step size of 1.25.

$$\int_0^{10} \frac{300x}{1 + e^x} dx$$

- a) Use Rectangular rule.
- b) Use Trapezoidal rule.
- c) Use Simpson's rule.