Assignment - 3.

Part - A.

1. Write the formulae for the first and second order derivatives at the end values $x = x_n$.

2. Find $\dfrac{dy}{dx}$ at $x = 1$ from the following table:

x :	1	2	3	4
y =	1	8	27	64

3. What are the errors in Trapezoidal and Simpson's rules of numerical integration?

4. Using Trapezoidal rule, evaluate $\displaystyle\int_{0}^{1} \dfrac{dx}{1+x^2}$ by taking $h = 0.5$.

5. Evaluate $\displaystyle\int_{0}^{6} \dfrac{dx}{1+x}$ by using Simpson's one-third rule.

Part - B

6. Find y' at $x = 51$ from the following data.

x :	50	60	70	80	90
y :	19.96	36.65	58.81	77.21	94.61

7. Evaluate $\displaystyle\int_{1}^{2}\int_{1}^{2} \dfrac{dx\,dy}{x+y}$ by using Trapezoidal and Simpson's rule, taking $h = k = 0.25$.

—————.