



# SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107

**AN AUTONOMOUS INSTITUTION**



Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

## TUTORIAL

### Taylor series method:

1. By Taylor series method, find  $y(0.1)$ ,  $y(0.2)$  if  $\frac{dy}{dx} = 3e^x + 2y$ ,  $y(0) = 0$ .
2. By Taylor series method, find  $y(0.1)$ ,  $y(0.2)$  if  $\frac{dy}{dx} = x - y^2$ ,  $y(0) = 1$ .
3. Using Taylor series method, find  $y$  at  $x=1.1$  by  $\frac{dy}{dx} = x^2 + y^2$ ,  $y(1) = 2$ .
4. Using Taylor series, find  $y$  at  $x=0.1$  if  $\frac{dy}{dx} = x^2 y - 1$ ,  $y(0) = 1$ .

### Euler method:

5. Solve  $y' = \frac{y-x}{y+x}$ ,  $y(0)=1$  at  $x=0.1$  by taking  $h=0.02$  by using Eulers method.

### Modified Euler method:

6. Apply modified Euler's method to find  $y(0.2)$  and  $y(0.4)$  given  $y' = x^2 + y^2$ ,  $y(0)=1$  by taking  $h=0.2$ .