SRM Institute of Science and Technology
Department of Mathematics
21MAB206T- Numerical Methods and Analysis
Unit IV: - Numerical Solution of Ordinary Differential Equations
Tutorial Sheet – I

1. Solve $\frac{dy}{dx} = x + y$ given y (1) = 0, and get y (1.1) by Taylor series method.
   Ans: 0.11033
2. Solve $\frac{dy}{dx} = x^2 - y$ given y (0) = 1, and get y (0.1) , y (0.2) by Taylor series method.
   Ans: 0.90512, 0.12826.

3. Solve $\frac{dy}{dx} = 1 - 2xy$ given y (0) = 0, and get y (0.2) , y (0.4) by Taylor series method.
   Ans: 0.19475, 0.35988.

4. Given $y' = -y$ and y (0) = 1, determine the values of y at x = (0.01) (0.01) (0.04) by Euler method.
   Ans: 0.9900, 0.9801, 0.9703, 0.9606.

5. Given $y' = x + y$ and y (0) = 1, determine the values of y at x = (0.0) (0.2) (1.0) by Euler method.
   Ans: 1.2, 1.48, 1.856, 2.3472, 2.9466.

6. Use Euler's method to find y (0.4) given $y' = xy$, y (0) = 1.
   Ans: 1.06110