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

1. Using Improved Euler's method solve $\frac{dy}{dx} = x^2 - y$, y (0)=1, for x=0.1.

   Ans: 0.9055

2. Using Improved Euler's method solve $\frac{dy}{dx} = y + e^x$ y (0)=0, for x=0.2, 0.4.

   Ans: 0.24214, 0.59116

3. Find y (0.2) by Improved Euler's method, given $\frac{dy}{dx} = -xy^2$, y (0)=2, if h = 0.1. **Ans: 1.9227**

4. Compute y at x = 0.25 by Modified Euler Method given $\frac{dy}{dx} = 2xy$, y(0)=1. **Ans:1.0625**

5. Using Modified Euler Method, get y (0.2), y (0.4), y (0.6) given $\frac{dy}{dx} = y - x^2$, y (0) = 1. **Ans: 1.218, 1.467, 1.737.**

6. **Use** Improved Euler's Method and Modified Euler Method, to get y (1.6) if $\frac{dy}{dx} = y^2 - \frac{y}{x}$, *if* $y(1) = 1$.

   Ans: 1.1766