

DEPARTMENT OF MATHEMATICS
BIRLA INSTITUTE OF TECHNOLOGY MESRA, RANCHI
IMM5002 Numerical Method Lab, Session: (MO-19)
Lab Assignment - 10

1. Consider the model stiff ODE

$$y' = -1000(y - (x + 2)) + 1, y(0) = 1$$

Solve this ODE by Explicit Euler method from $x = 0$ to 0.01 with $h = \Delta x = 0.0005, 0.0001, 0.002$ and 0.0025 .

2. Repeat the exercise 1 using Implicit Euler method from $x = 0$ to 0.1 with $h = \Delta x = 0.01, 0.05$ and 0.1 .
 3. Work the same problem by modified Euler method with the parameters used in exercise 1.
 4. Work the same problem by fourth order Runge-Kutta method with the parameters used in exercise 1.
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