

**Exercises**

**Q1:** Consider the following initial value problem:

$$y' = x/y, \quad y(0) = 2.$$

- Use **Runge-Kutta** method of order 2 to find the approximate values of  $y(0.1)$ ,  $y(0.2)$ ,  $y(0.3)$  and  $y'(0.2)$ .
- Depending on the results of a., find the approximate value of  $y(0.15)$
- Find the absolute error at each point in a.

**Q2:** Consider the following initial value problem:

$$y' - 2xy = 0, \quad y(0) = 1 \\ x \in [0, 0.4]$$

- Use **Modified Euler** method to find the approximate values for  $\{x_i\}_{i=1}^2$ , with  $h = 0.2$
- Find the absolute error at each point.