Problem Statement : Solving an ODE using Euler's Method

Consider the following first-order differential equation:

$$\frac{dy}{dt} = -2y + 4, \quad y(0) = 1$$

1. **Implement Euler's Method** to solve the differential equation numerically for ttt in the interval [0, 5] with a step size of h=0.1

   Plot the numerical solution y(t) obtained from Euler's method.

2. If the analytical solution to this differential equation is:

$$y(t) = 2 - (2 - y_0)e^{-2t}$$

   where y_0=1, compute the analytical solution for y(t) at the same time points used in the numerical solution and compute the error of the numerical solution at each step.

3. Investigate the impact of varying the step size h (try values h=0.05, and h = 0.2) on the accuracy of Euler's method.