

## Part of Homework 1, due February 3, 2010

Use the midpoint method to solve with Matlab:

$$x' = -x^2, \quad x(0) = 1$$

on the interval  $(0, 1)$ . The exact solution is

$$x(t) = \frac{1}{1+t}.$$

Generate the initial value  $x_1$  using the exact solution. Take a first step size  $h = 0.2$  and  $h = 0.1$ . Give in a table the values for the numerical solution, the exact solution and the global error at each mesh point.