AMSC/CMSC 460: HW #11
Due: Thursday 5/9/17 (in class)

For all problems please use Matlab.
The solution should include the Matlab code, and a graph of the computed solution.

1. Write a program to solve each problem on the indicated intervals using Euler's method. Each problem should be solved 3 times, with different values of h. Use $h = 1/10, 1/100, 1/1000$.

   (a)

$$\begin{cases} x' = t + x^2, & t \in [0, 1] \\ x(0) = 1. \end{cases}$$

   (b)

$$\begin{cases} x' = x - t, & t \in [1, 2] \\ x(1) = 1. \end{cases}$$

2. Repeat problem (1) with the Modified Euler method.

3. Use Matlab's built-in RK45 routine to solve the ODEs in problem (1).