Math 4329 **Matlab Homework 01, Due on October 20, 2016**

Please read the following instructions carefully

1. You need to turn in a printout of the program for each one of the problems. Each program that you turn in should include YOUR NAME and the date of its creation.
2. You should be able to answer questions related to the program modified by you in case needed.

1. Solve the equation

$$x^3 - 3x^2 + 3x - 1 = 0$$

on Matlab with an accuracy of $\epsilon = 10^{-6}$ using:

(a) Bisection Method based on the bisection code discussed in class for the intervals $[0, 1.5]$ and [0.5,2.0]. Call the program **bisect_01.m** and **bisect_02.m** respectively. Report a table of outputs just like Table 3.1. Additionally, report the relative error for each n.

(b) Newton's Method based on the Newton's Method code discussed in class with initial guess x_0 being the midpoints of the intervals $[0, 1.5]$ and [0.5,2.0]. Call the program **Newton_01.m** and **Newton_02.m** respectively. Report a table of outputs just like Table 3.2. Additionally, report the relative error for each n.

(c) Secant Method based on the Secant Method code discussed in class with initial guess x_0 and x_1 being the endpoints of the intervals $[0, 1.5]$ and [0.5,2.0]. Call the program **secant_01.m** and **secant_02.m** respectively. Report a table of outputs just like Table 3.3. Additionally, report the relative error for each n.

(d) Repeat (b) and (c) for Newton's Method and secant method with your own choice of initial guesses please provide a justification for the guesses. Name the corresponding files with the prefix '**my_**'. For example, **my_secant_01.m**

2. Section 4.3, Problem 5.

3. Section 5.1, Problems 2(a) and 2(b).