

Math 5630 Hand-in Homework 01

Due 9:45 am, Wednesday May 29. You may submit a hard copy at the beginning of class or email pdf copies of your work. Provide the programming code and output of your work. If you send the homework electronically please use your last name as the beginning of the file name of the homework (e.g. smithHomeworkNum01.pdf.)

- 1.) Find all the roots of the following polynomial:

$$f(x) = X^3 - 5x^2 + 3x - 6.$$

Use the bisection, Newton's method and the secant method. Do ten iterations. Determine which method works best.

- 2.) Find all the roots of the following polynomial:

$$f(x) = X^4 - 4x^2 + 4.$$

- a.) Use Newton's method and the secant method. Do ten iterations.
- b.) Determine which method works best.
- c.) Why doesn't the bisection method work?

- 3.) Do problem 16 section 2.2, also find the first two non-zero fixed points. The use Newton's method and compare the two methods. Do ten iterations.

- 4.) Do problems 23 and 24 section 2.2. Compare with Newton's method. Do ten iterations.