

MATH 111 – MATLAB ASSIGNMENT 3 – DUE 19 JUNE 2013

Answer all of the following questions. You may work in groups of no more than **three persons** to complete this assignment. One copy of the completed assignment is to be turned in for each group.

You are expected to turn in the following items:

1. A printout of a MATLAB diary file containing the MATLAB commands and output that you used to complete the assignment. You must also include text explaining what you are doing. This can be done in two ways, (a) by typing comments directly on the MATLAB command line (MATLAB ignores everything typed after a % sign, or (b) by editing your diary file afterward in a text editor.
2. Any hand calculations that you are asked to do as part of the assignment. These should be put on a separate sheet of paper.
3. Turn in your assignment as either a `.txt` file or as a `.pdf` file through Blackboard.
4. If you work in a group, please turn in just one assignment for the group and make sure that the names of the entire group appear on the assignment.

This assignment is due before 9:30 am on Wednesday 19 June 2013. No late assignments will be accepted. You may turn in the assignment early if you wish.

1. (12 pts. each) Consider the data given in problem 14, p. 43 of the book (I mean the book Goldstein, Schneider, and Siegel, *Finite Mathematics & its Applications*, not the printed out class notes). Let x be the number of years after 1995, and y the enrollment in millions.

- (a) Using MATLAB, set up and solve the normal equations giving the best-fit least-squares line for the given data. Be sure to write down the equation of the line explicitly. Use the equation you found to estimate the enrollment in 2010.
- (b) Using MATLAB, set up and solve the normal equations giving the best-fit least-squares cubic (that is, degree 3) polynomial for the given data. Be sure to write down the equation of the polynomial you find explicitly. Use the equation you found to estimate the enrollment in 2010.
- (c) Using MATLAB, set up and solve the equations giving the degree 6 *interpolating* polynomial for the given data. Be sure to write down the equation of the polynomial you find explicitly. Use the equation you found to estimate the enrollment in 2010. Of the three estimates you found in parts (a), (b), and (c), which do you think is most accurate?