Math 308, Spring 1999

Assignment 1.

Given Friday, April 2; due Friday, April 9.

Objectives: (1) To practice solving linear systems by hand and by computer, (2) To learn to use MATLAB by solving a fun problem.

Exercises from the text:

p. 25, #17, 18, 29, 30, 36.

p. 37, #8, 10, 22.

p. 43–44, #2, 6.

MATLAB exercise:

Following is census data showing the population of the U.S. between 1900 and 1980:

year	population in millions
1900	76.0
1920	105.7
1940	131.7
1960	179.3
1980	226.5

Plot this data using MATLAB by entering the years into a vector x and the populations into a vector y and giving the command `plot(x,y,'o')`. Set up a linear system to solve for the coefficients of a fourth degree polynomial that passes through each data point, and solve this linear system using MATLAB. Plot the resulting polynomial on the same graph, and determine its value in the year 2000. Is this a reasonable way to estimate the population of the U.S. in future years? [To see a demonstration of other methods of extrapolation, type `census` in MATLAB.]

Hand in: Your plot and output showing what linear system you solved and the solution that you obtained, along with the value you estimated for the population in the year 2000.