MA/CS 321:001 MWF 11:00-11:50 FB 213 Fall 2004

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Announcements. Yes, we will have class the day before Thanksgiving. We will spend a day or so on section 7.2, tri-diagonal systems and then turn to Chapter 9 to study splines.

Homework 9.

This assignment will be due on Wednesday, 31 November 2004.

1. (15 points) Write two matlab functions to solve a linear system Ax = b by Gaussian elimination with scaled partial pivoting and back-substitution.

The function, function [c index] = mygauss2(a) will accept an $n \times n$ matrix a and return a matrix c and an index vector where the value of index(1, k) is the number of the row used in the kth pivot.

The second function, x = mysolve(c, index, b) takes the matrix c and the index vector index produced by the function mygauss2 and a column vector b and returns the solution of ax = b.

Skeleton files for these functions are available at the course web page. Use the sample code from the text and lecture to fill in the missing details.

Test your function with script gausstest.m which can be found using google or by going to www.math.uky.edu/~rbrown/courses/ma321.f.04 The script compares the naive gauss code, our new code with partial pivoting and matlab's built in solve command. The test script may not be ready until after Thanksgiving.

You will need a working version of mygauss.m to run this test. If you have already deleted your homework 8, please send e-mail and ask for my solution.

To hand in: Printout of your functions mygauss2.m, mysolve.m and the result of running the script gausstest.m.

2. (5 points) page 307, #4.

November 20, 2004