Assignment 10
CSCI 3656
due April 7, 2011

1. Given data (x_i, y_i) for $i = 1, \ldots, n$, in order to compute the cubic spline coefficients (b_i, c_i, d_i), you must (i) set up the equations (3.30) on page 175, (ii) solve the tridiagonal system by Gaussian elimination for c, and (iii) compute the b_i and d_i. How many additions, multiplactions and divisions are required to do this? (Just gve the term proportional to n, but show your calculations.)

2. On a piece of graph paper write an interesting letter of the alphabet in cursive. Choose about 10-15 points on on the curve of the letter, and record their x and y coordinates in the order in which you wrote the letter. Using Matlab, come up with a parametric spline $(s_x(t), s_y(t))$ that interpolates the data. Plot the parametric spline and the data points. You may want to play around to find a good set of points. Turn in your your original letter and a plot of the spline and the (x, y) data.