Math 451   ASSIGNMENT 20, SPRING 2014   **Due at 9 AM Friday, June 6th**

For this assignment you are to create a function file that reads in two data vectors of equal length (representing x and y data), plots the data as points (or asterisks, or whatever you want) and then plots the cubic spline interpolation of the data. Here are a few constraints and suggestions:

- Name the file *yourfirstname_cs*.

- Assume that the data vectors are row vectors.

- Do a search for *MATLAB* cubic splines and look at the top site.

- The plot of the cubic spline should be from one unit less than the smallest x data value to one unit larger than the largest x data value.

- Make the data points and the plot different colors, and put some sort of axis labels and title on your graph.

Math 451   ASSIGNMENT 21, SPRING 2014   **Due at 9 AM Sunday, June 8th**

- Rename your *lagrange3* file as *yourfirstname_compare*. You may start with my *lagrange3* file instead if you wish - I will post it after it's due.

- Change the file back to a script file and add two lines at the start with the vectors

  ```
  xdata=[1  2  3  4  5  6  7  8  9  10]      and      ydata=[7  5  6  6  4  5  6  8  7  5]
  ```

- Your file should determine and plot the Lagrange polynomial for the given data vectors. Check that it does.

- Add some lines of code to determine the cubic spline interpolation for the same data, and to plot it on the same graph as the data and the Lagrange polynomial. Use black asterisks for the data points, a blue curve for the Lagrange polynomial, and a magenta curve for the cubic spline interpolation.

- "Interpolation" means finding values of a function at x values between x values where the function values are known. Add some commenting at the end of the code telling where you would be comfortable using the Lagrange polynomial for interpolation, and where you would feel comfortable using the cubic spline for interpolation, *both for this particular set of data*. **Then**, speculate as to where each type of interpolation would provide good function values between x data points *for any set of data*. Add that to your comments as well.