MATH 4257/5257
Numerical Analysis
Assignment for Week 1
Due Friday, September 10 by midnight.

4. <u>Overview of Assignment</u>:
   This assignment is designed to introduce you to the software we will be using the entire semester – Matlab. Each of you are required to purchase a student version of Matlab which can be purchased at the University Bookstore. The goal of this assignment is to get you comfortable with how Matlab looks and works, how to use Matlab for basic functions, how to run multiple commands at once and how to publish your work (this will be important when turning in assignments in the future).

5. <u>Assignment</u>:
   - Go to the url: www.mathworks.com/academia/student_center/tutorials/register.html
   - Register to enter the site for tutorials.
   - Complete the following online interactive tutorials:
     ➢ **MATLAB On-Ramp:**
       - Navigating the MATLAB Desktop (5:48)
       - MATLAB Fundamentals (28:11)
     ➢ **MATLAB for Problem Solving:**
       - Using MATLAB to Solve Problems (2:10) – this is to just introduce you to the problem they will be using the tutorials assigned next
       - Automating Analysis with Scripts (9:17)
       - Publishing MATLAB Programs (7:24)
   - Read (be familiar with) Sections 1.1-1.6, 2.1-2.5 and 3.1 in *Learning Matlab* by Driscoll. A lot of this information you will have seen in the tutorials, so you need to only skim through to make sure you have a good overview of Matlab.
   - Create a script file that performs the following calculations. Publish the report as an html file and upload the published report to the dropbox in D2L.
     1. Define the variable A in Matlab to be the matrix $A = \begin{bmatrix} 2 & 3 & -1 \\ 0 & 8 & 10 \\ -3 & 0 & -10 \end{bmatrix}$.
     2. Define k to be the element of A in the 1st row, 3rd column using matrix indices.
     3. Compute kA.
     4. Define x to be a row vector going from 2 to 3 in increments of ½.
     5. Find A*x and A*x^T. Which does not work? Why? What does Matlab do?
     6. Use the command *clc* in Matlab. What happens? Are the variables you still created still defined?
     7. Now use the command *clear A*. Then type in *A* in Matlab and the enter button. Is *A* still defined?
     8. Now use the command *clear all.* What happens?
     9. Use the *linspace* command to define the variable *t* to be a vector with 50 components that goes from –π to 3π. Make sure to suppress the output by using the ";" symbol after the command.
     10. Use the *plot* command to plot *cos(t)*.
   - If you need help, please email me at joynerm@etsu.edu. Otherwise, I will be back in the office on Tuesday, September 7.