Math 313/513, Homework 1 (due Thurs. Jan. 19)

Name:_____ 313 or 513 (circle)

Reading

- Section 1.1 of Strang.

Book problems

- Math 313: From section 1.1: 1, 2, 5, 6, 13.
- Math 513: all of the above, plus problem 29

MATLAB problems

1. Do you have regular access to MATLAB and/or Octave? Take some time to create some vectors and play around with them. See exactly what happens if you try to add a vector of length 2 to a vector of length 3, or if you try to add a row vector to a column vector.
2. Do the following exercises, then collect all of your code into a single `.m` file. **Make sure you comment your commands using** %. Print out your file, and include it with the book problems.
   - Create vectors `a` and `b`, whose entries are, respectively, (2,0,-3), and (-1.5, 1, 3).
   - Create a vector `c` given by the linear combination $3\vec{a} - 2\vec{b}$.
   - Create a vector `x` consisting of all numbers from 0 to π in steps of 0.01. Also, use MATLAB to create a variable `n` equal to the number of elements in the vector $\vec{x}$. (See the useful remarks below.)
   - Create a vector `y` whose elements are the cosines of the elements of $\vec{x}$.
   - Run the command `plot(x,y);` and indicate in your comment what happens.

Some useful remarks

- The command `whos` tells you all of the variables that currently exist. (What is the variable `ans`?)
- The command `clear` will clear any variables you have created in the current session.
- The command `clear x` will clear only the variable `x`.
- The `help` command gives you documentation for a particular command, such as `help length`.
- Using the up arrow will recall commands you have recently typed.