Math 308H Assignments (Jan 30 - Feb 3)

READING

We will begin working through Chapter 3. There is quite a bit of repetition in this chapter, so we try to cut through to the chase efficiently.

Section 3.1 - This section quickly reviews the basics of vectors in R^2 and R^3. You should give a quick look, but we will be focusing on the new stuff in higher dimensions.

 Section 3.2 – The really key idea of a subspace is introduced in this section with some pages of motivation. A subspace is the higher-dimensional generalization of a line or a plane through the origin**. For us the working definition of a subspace is actually listed as a theorem: Theorem 2.** This gives 3 things that must be true about a set for the set to be a subspace.

In this section the book uses the (somewhat ill-defined and non-standard) terms **"geometric interpretation"** and "**algebraic specification"** on pp. 170-171. This is actually clearer in the next section where some mathematical definitions are made. However, this is what is meant:

- "Geometric interpretation" means to write the space as the set of all linear combination of a set of vectors (as small a set as possible). This concept is really the concept of "span" in Section 3.3.

- "Algebraic specification" is a bit clearer. It means to write the set as the solution set of a homogeneous system of linear equations (again, with as few equations as possible). This is related to the concept of "null space" in Section 3.3

One other significant thing in this section is a couple of examples of sets that are *NOT* subspaces.

Section 3.3 is really the key reading assignment for this week, since it introduces the key concepts of null space and span and the names of the special spaces associated with a matrix. We will spend Wednesday covering as much of this as possible in class.

Written Assignment #4 (due Friday, 2/3)

Section 3.3

#14, 16, 17, 18, 22, 23, 24, 26, 28, 32, 33, 34, 40

Note: Understanding these problems is very important.