Math 308H Assignment (Feb 3 – Feb 8)

QUIZZES

There will be a short quiz each day next week on finding bases, etc. Monday quiz will be on finding a basis of a subspace defined as the set of solutions to a homogeneous linear equation (another way to say this: find a basis for the null space of A).

READING

Section 3.4 Defines the concept of ***Basis*** and then gives a number of examples that show methods to find a basis for a subspace. You should notice that one method work when you are given equations defining the subspace and two different methods are given when you are given a set of vectors inside the subspace that span the subspace.

Section 3.5 defines the concept of ***Dimension*** of a subspace, which is the number of elements in a basis. For this definition to make sense, one has to prove that any two bases have the same number of vectors. Then each of the subspaces associated with a matrix has a dimension, and there is a name associated to each. Once you have this concept, you can reason and make conclusions sometimes with fewer calculations. For example, if the rank (i.e., the dimension of the range) of an mxn matrix A equals m, then every equation Ax = b is consistent

Written Assignment #5 (due Wednesday, 2/8)

Section 3.4 (each pair of problems refers to the same matrix, so do them in pairs)

#11 and 17
#13 and 19
#14 and 20
#21, #23
Section 3.5

#14, 17, 20, 26, 28, #33
In these next four problems the book says "prove" but does not mean anything fancy or abstract. You know some facts about dimension and linear independence and dependence. Just explain simply how one or more of these facts explains why the statement is true.

#34, 36, 37, 38

END OF WRITTEN ASSIGNMENT #5

Additional assigned Problems TO DO BUT NOT TURN IN:

Do Problems 1-9 of Section 3.5 (or at least most of them).

These are a very good mental exercise (by inspection). Should be quick. Strongly recommended as prep for tests and harder problems.