Test 2 will be in PKH 319 in class time, Tues Oct 13

- See above for date, time and location of Test 2. It will last 45 minutes and is worth 18% of your course grade.
- The material to be covered on the test is the same as that covered in Chapters 1-3 and 5. (Homework is at my website: http://www.uta.edu/math/vancliff/T/F15/hwk5333.html .)
- My office hours are Tues & Thurs 4:45-5:20 pm in PKH 462.
- When I write a test, I look over the lecture notes and homework which have already been assigned, and any previous tests, and use them to model about 85% of the test problems (and most of them are fair game). You should expect 5-8 questions in total.
- You should know the definitions of the concepts (and examples thereof) that arise frequently in class; the theorems etc that are used frequently or which have a name; how to apply the theorems to examples and at least one method for doing each homework question. Learn any formulae taught in class. Skimming over short proofs (at most 6 or so lines) from lecture could also be helpful.
- A good way to review is to go over the homework problems you have not already done & make sure you understand all the homework well by 48 hours prior to the test. Consider adopting one or more of the study techniques linked at my website.
- It is your responsibility to be on time.
- Try to keep your eyes on your own work during the test.
- BRING YOUR MYMAV ID CARD WITH YOU. All other nontest items will have to be put by the side walls or by my desk prior to the start of the test; this includes cell phones & tablets, which need to be switched off & in with your belongings by the wall – noncompliance will result in a score of 0 on the test.
- If you wish to leave the room during the test, you should ask permission first & turn in your test to me. Only in exceptional circumstances will I let you continue the test should you return. (So it is better to be 3 minutes late to the test, rather than ask to go to the bathroom during the test.)
- I plan to return the graded test to you on Thurs Oct 15 (or the following Tuesday) and have a lecture as usual that day.

In the following, $\mathbb{F}$ denotes $\mathbb{R}$ or $\mathbb{C}$.

In order to solve systems of linear equations with coefficients in $\mathbb{F}$, we consider $\mathbb{F}^n$ and $m \times n$ matrices with entries in $\mathbb{F}$. This leads us to the notion of vector space over $\mathbb{F}$. To eliminate redundancy in a vector space and to find "simple" ways to describe vector spaces, we consider linear (in)dependence, spanning sets, bases and ways to write a vector space as a (direct) sum of subspaces. To solve differential equations, one sometimes needs to consider infinite-dimensional vector spaces, which are studied in detail in functional analysis.

We represent a linear map from one finite-dimensional vector space to another by a matrix, and use matrix multiplication to compute the composition of two linear maps.

If the vector space is finite-dimensional, then a linear map from it to itself is represented by a square matrix. In this case, we use the notion of eigenvector and eigenvalue to understand the linear map better. The notions of eigenvector and eigenvalue lead us to eigenspaces and invariant subspaces. If the linear map provides an eigenbasis for the vector space, then there exists a diagonal matrix that represents the linear map.