

## Review Guide.

Exam 1 will cover Chapter 1 and everything that was covered in class from day 1 through February 17. The purpose of this sheet is to give you some advice on how to prepare over the time remaining. If you kept up with the homework, read the book, and came to class each day, then you should be pretty well prepared with just a couple of hours review.

Start reviewing by going over all the problems on the review sheet. If you have trouble with any, go to the appropriate section of the book and reread it. Then practice by completing the exercises at the end of the section. It is also a good idea to go over the old homework to be sure that you know how to do all assigned problems.

An essential part of learning linear algebra is to know the definitions. Throughout the semester we will be using the definitions and concepts introduced in Chapter 1. There will be questions on the exam that ask for definitions. If you do not give the definition, but instead give a property, you will not get credit. For example, if you are asked for the definition of linear independence and you make a statement about pivot elements, you are not giving the definition. Listed below are terms whose definition you are expected to know.

1. Linear combination of vectors and their weights
2. The span of a set of vectors
3. Homogeneous system of linear equations
4. Linear independence and linear dependence
5. Linear transformation
6. Standard matrix for a linear transformation
7. One-to-one mapping
8. Onto mapping

You are advised to reexamine each definition in the book and make sure you know it. On the exam, I will not count off if your wording is slightly different from the wording in the book, but you have to clearly express the correct idea to get credit.

There will be some computation on the exam, but it will be fairly simple arithmetic. You should not have to deal with decimals or too many fractions. No calculators are allowed on the exam. When doing the computational problems, be sure to take your time so that you do not make a simple arithmetic error. The exam was designed so that if you are prepared, you can easily finish in 50 minutes with time to check answers. There are ten questions on the exam, so you will have five minutes to answer each one.

When writing your answer, be sure to keep in mind that your answer will need to include the computation that produces the answer and if request in the problem, a sentence justifying your answer. For example, if you are determining if a set of vectors is linearly independent and do the appropriate row reduction to get your answer, you will be expected to state how you know that the set of vectors is independent (or dependent) based on the row-echelon form of the final matrix. In other words say something like, "The vectors are linearly independent because there are no free variables." Or "The vectors span  $\mathbf{R}^3$  because every row has a pivot element."