Possible Topics

This is a (not exhaustive) set of possible topics for Exam 2, roughly correlating to sections of the textbook.

Basis and Dimension

1. Know how to determine if a collection of vectors is a basis for a vector space.
2. Be able to determine the dimension of a vector space.
3. Know the standard bases for the vector spaces that we've worked with so far.

Change of Basis

1. Understand the relationship between a coordinate vector and a basis for a vector space.
2. Know how to change between one basis and another for a vector space.
3. Be able to determine the transition matrix between two different bases.

Row Space and Column Space

1. Be able to find bases for the row space and column space of a matrix.
2. Know the definition of rank and how it relates to the row and column spaces.
3. Be able to determine if a system is consistent using the column space.
4. Understand the relationship between the rank and the nullity of a matrix.

Linear Transformations

1. Know how to determine if a transformation is linear or not.
2. Be able to determine the matrix representing a linear transformation from $\mathbb{R}^n$ to $\mathbb{R}^n$.
3. Given bases for vector spaces V and W, be able to determine the matrix representing a linear transformation from V to W with respect to those bases.

Review Exercises

These are a few problems from the textbook which, in addition to reviewing the homework, may help you better prepare for the exam.

Section 3.4: 10, 14(c).
Section 3.5: 1(a), 10.
Section 3.6: 4(d), 15 (10 in 7th Edition).
Section 4.1: 4, 6(a).
Section 4.2: 4(a).