

The second exam is next Wednesday, April 18. It will cover sections 2.2, 2.3, 3.1-3.3, 4.1-4.7, 5.1 and 5.2. The following suggestions might guide your studying.

★ Know the following definitions, and how to work with them:

vector space, subspace, nullspace, column space, row space, linear transformation, kernel, range, basis, linearly (in)dependent, coordinate mapping, change of coordinate matrix

⇒ *You should memorize the definitions, except not the 10 axioms required to be a vector space.*

★ Make sure you know how to

1. Invert a matrix
2. Compute a determinant
3. Find a basis for $\text{Row}(A)$
4. Find a basis for $\text{Col}(A)$
5. Find a basis for $\text{Null}(A)$
6. Check if a given set of vectors forms a basis of \mathbb{R}^n or \mathbb{P}_n
7. Check if H is a subspace of V with the Subspace Test
8. Determine the coordinates of a vector with respect to a basis \mathcal{B}
9. Determine a change of coordinates matrix
10. Compute the rank of a matrix
11. Find the dimension of a vector space
12. Compute the eigenvalues of a matrix
13. Compute the eigenvectors corresponding to the eigenvalue λ

⇒ *You can find extra practice problems for these skills in your book.*

★ Study the theorems, especially

Chapter 2: **Thm 8** (pg 129, pg 267,)

Chapter 3: **Thm 4** (pg 194), **Thm 6** (pg 196), and **Thm 9** (pg 205)

Chapter 4: **Definition of subspace** (pg 220—for us, this was a Theorem), **Thm 6** (pg 241), **Thm 7** (pg 246), **Thm 13** (pg 263)