Exam 3 - topics

Topics Covered: Sections 3.1 – 3.3, 4.1 – 4.7, 5.1 – 5.2
Exam Date: Tuesday, Nov 26

Know the following definitions:

- Determinant of a matrix
- Linear Independence/Dependence
- Linear Transformation
- Vector Space/Subspace
- A Basis & Basis coordinates
- Dimension
- Col(A), Nul(A), and Row(A)
- Eigenvector/Eigenvalue/Eigenspace
- The characteristic equation

Know how to:

- Find the determinant of a matrix
- Determine whether a set of vectors is linearly independent
- Determine whether a set of vectors spans a set
- Determine whether a set of vectors is a basis
- Determine whether a set is a vector space
- Determine the dimension of a vector space
- Find the $\mathcal{B}$ coordinates / convert between $\mathcal{B}$ and $\mathcal{C}$ coordinates
- Find Col(A), Nul(A), and Row(A)
- Determine whether a given vector/scalar is an eigenvector/eigenvalue
- Find the eigenvalues/eigenvectors/eigenspaces of a matrix

Know the main properties (ie: important theorems)

- The main theorem of section 2.3 – with the extra properties
- The Rank Theorem
- The relationship of the dimension of a subspace to the dimension of its vector space

Sample Questions from the homework:

- Sect 3.1: #13, #41
- Sect 3.2: #11, #22, #25, #31
- Sect 3.3: #1, #15, #21
- Sect 4.1: #3, #13, #15
- Sect 4.2: #11, #17, #31
- Sect 4.3: #13, #15
- Sect 4.4: #9, #29, #32
- Sect 4.5: #5, #13, #21
- Sect 4.6: #3, #6, #7
- Sect 4.7: #7, #13
- Sect 5.1: #5, #7, #9
- Sect 5.2: #7