Math 244-Syllabus Summer Semester 1441

Text book: Elementary Linear Algebra with Supplemental Applications, 11th Edition By Howard Anton and Chris Rorres

First Miterm 29/10/1411
Second Midterm 14/11/1441
Final Exam 1/12/1441
Project Due Date 25/11/1441

Chapter 1

1.1 Introduction to Systems of Linear Equations

1.2 Gaussian Elimination. (Example 9 on page 22 is NOT included).

1.3 Matrices and Matrix Operations

1.4 Inverses and Algebraic Properties of Matrices (Proofs of Theorems 1.4.4, 1.4.6, and 1.4.9 are included)

1.5 Elementary Matrices and a Method for Finding A^{-1}

1.6 More on Linear Systems and Invertible Matrices

1.7 Diagonal, Triangular and Symmetric Matrices

1.8 Matrix Transformations (From Definition 1 to the end of example 1 and from page 80 "A procedure for Finding Standard Matrices" to the end of Example 4)

Chapter 2

2.1 Determinants by Cofactor Expansion

2.2 Evaluating Determinants by Row Reduction

2.3 Properties of the Determinants and Cramer's Rule

Chapter 3

3.1 Vectors in 2-Space, 3-Space and n-Space (From Definition1, Page 136).

3.2 Norm, Dot Product and Distance in R^n (The proof of Theorem 3.2.6 and Theorem 3.2.7 is included).

3.3 Orthogonality (Definition1, Example1 (a), Theorem 3.3.3, Example 6)

Chapter 4

4.1 Real Vector Spaces (Exercise 11 is solved in the lecture)

4.2 **Subspaces** (All except Example 12, the proof of Theorem 4.2.4 is included)

4.3 **Linear Independence** (Proof of Theorem 4.3.3 is included)

4.4 **Coordinates and Basis** (From Definition 1)

4.5 **Dimension** (Exercise 7 (d) is solved in the lecture)

4.7 **Row Space, Column Space and Null space**

4.8 **Rank, Nullity and the Fundamental Matrix Spaces** (The proof of theorem 4.8.5 is included). (The concept of orthogonal complement is NOT included).

4.9 **Basic Matrix Transformations in R^2 and R^3** (From page 265 to the end of the section is NOT included)

4.10 **Properties of Matrix Transformations**

Chapter 5

5.1 **Eigenvalues and Eigenvectors**