LINEAR ALGEBRA
MATH 3013 SECTION 002, SPRING 2009
INSTRUCTOR: WEIPING LI

REVIEW FOR EXAM 1

(1) §1.1. Must understand the basic arithmetic operations among vectors in $\mathbb{R}^n$; familiar with the linear combination of vectors and standard basis for $\mathbb{R}^n$.
(2) §1.2. Must know the dot product of two vectors in $\mathbb{R}^n$. Know how to compute the norm and angle between two vectors. For example, 1-15(odd), 23-33(odd).
(3) §1.3. Must know how to compute the product of two matrices; Must know $AB \neq BA$ in general for matrices product. For example, 1-21(odd).
(4) §1.4. Must know how to interchange between the system of linear equations and the augmented matrix form; Must know the elementary row operations; must know the row echelon form and reduced row echelon form. For example, 1, 3, 7, 9, 17, 19, 27, 29, 35-49(odd).
(5) §1.5. Every elementary matrix is invertible, and every invertible matrix is a product of elementary matrices. Must know how to determine the invertibility, and find the inverse if it exists; Read Theorem 1.12 on page 81 and make sure you understand how to use it. For example, 3-13(odd), 19-23(odd).
(6) §1.6. Must know the concepts on span, basis, unique linear combination and nullspace. Must know how to determine a nullspace of a matrix (or equivalently a basis for a homogeneous linear system); Must know how to determine the consistent, inconsistent systems of linear equations; determine a set of basis for a span of vectors. For example, 17, 19, 23, 25, 31, 32.