

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

REVIEW FOR EXAM 3

- (1) §3.5. Familiar with Definition 3.12 on page 230 for the basic inner product. Ex. Example 4 on page 233, 8-11, 14, 15.
- (2) §4.1. Basic Area, Volume and Cross products. Must be clear on the area of parallelograms spanned in  $R^2$  or  $R^3$ . Theorem 4.1 on page 246-247. Ex. 3, 7, 13, 21, 23, 27, 31.
- (3) §4.2. Must know the concepts of cofactors, determinant. Must know the properties of determinant in this section. Ex. 3, 7, 11, 15-20.
- (4) §4.3. Must know the computation of determinant by row-echelon form. Must know the Cramer's rule, Theorem 4.5 and Theorem 4.6. Ex. 3, 5, 14, 20, 25, 31.
- (5) §5.1. Must know the eigenvalues and eigenvectors. familiar with the characteristic polynomial, and nullspace to find eigenvalues and eigenvectors.
- (6) §5.2. Must know the criterion for the diagonalizability of a matrix (Theorem 5.4). Every symmetric matrix is diagonalizable. Ex. 5, 7, 9.
- (7) §5.3. Must know how to compute  $A^k$  with given eigenvalues and eigenvectors, must know how to solve the system of differential equations through diagonalization procedure. Example 1 on page 308, Example 3 on page 322. Ex. 9, 11, 13.