

Review 2 Math 335

Any term in **bold face** know the definition well enough to state it on the test. The definition you give should be very similar to the one in the book or one with similar detail.

Section 5.1 **eigenvector, eigenvalue, eigenspace**, be able to apply Theorems 1-2

Sample problems Example 4 Exercises 15,25, 26

Section 5.2 **characteristic equation, similar, multiplicity** , know Thm 3 and be able to **prove Thm 4**

Sample problems Example 5, Exercises 3

Section 5.3 **diagonalizable** ,be able to apply Thms 5,6

Sample problems Example 3 Exercises 13

Section 5.5 be able to show complex eigenvalues occur in conjugate pairs for real matrices(pg338)

Sample problems Example 2 Exercises 3

Section 5.7 Sample problems Example 2 Exercises 5

Section 6.1 **inner product, norm, orthogonal** , be able to apply Thm 1

Sample problems Example 4 Exercises 5, 24, 27

Section 6.2 **orthogonal basis, orthonormal basis, orthogonal projection, component of y orthogonal to u , orthogonal matrix** , be able to apply Thm5, **be able to prove Thm 7**

Sample problems Examples 3,6 Exercises 11,17

Section 6.3 **orthogonal projection of y onto W** , be able to apply Thm 8 and Thm 9

Sample problems Example 4 Exercises 9

Section 6.5 **least squares solution** , be able to apply Thm 13,14

Sample problems Example 1,2

Section 6.6 , be able to solve regression problems

Sample problems Example 1 Exercise 7

Section 7.1 **symmetric matrix, orthogonally diagonalizable**, **be able to prove Thm 1** apply Thm 3

Sample problems Example 3

Section 7.3 Sample problems Exercises 5,6

Section 7.4 **singular values, SVD**, **be able to prove eigenvalues of a matrix $B = A^T A$ are positive**

Sample problems Example 3,9, 11