

- Vector spaces, subspaces, independence, span, bases, dimension
 - Suggested review: homework #2-#3.
 - Suggested reading: lecture notes 1.1-1.5.
 - Linear transformations, kernel and image, nullity-rank, one-to-one and onto maps, isomorphisms
 - Suggested review: homework #4.
 - Suggested reading: lecture notes 2.1-2.3.
 - Matrices associated to linear transformations, rank and inverses, similarity, change of basis
 - Suggested review: homework #5.
 - Suggested reading: lecture notes 2.4.1-2.4.4.
 - Inner products, norms, orthogonality, Gram-Schmidt, orthogonal complements and projection, adjoints
 - Suggested review: homework #6-#7, homework #8 problem 8, homework #10 problem 4.
 - Suggested reading: lecture notes 3.1-3.4.
 - Eigenvalues and eigenvectors, eigenspaces, characteristic polynomial, similarity and diagonalization
 - Suggested review: homework #8 problems 1-7, homework #9 problem 6.
 - Suggested reading: lecture notes 4.1-4.2, Lecture 24.
 - Generalized eigenvectors and the Jordan canonical form.
 - Suggested review: homework #9 problems 3, 4, 7
 - Suggested reading: lecture notes 4.3-4.4.4, Lectures 25-26.
 - Cayley-Hamilton, matrix powers, systems of differential equations, Hermitian operators, spectral theorem
 - Suggested review: homework #9 problems 2, 5, 8, homework #10 problems 2, 5, 6
 - Suggested reading: lecture notes 4.4.5, Lectures 27-28.
 - Bilinear forms, matrix congruence, diagonalization of bilinear forms
 - Suggested review: homework #10 problems 3, 7, 8, homework #11 problems 2, 6.
 - Suggested reading: lecture notes 5.1, Lecture 29.
 - Quadratic forms and their relationship to bilinear forms, diagonalization over \mathbb{R}^n via spectral theorem
 - Suggested review: homework #11 problems 3(ab), 4(ab), 5,
 - Suggested reading: lecture notes 5.2.1-5.2.2, Lecture 30.
 - Quadratic varieties, second derivatives test, Sylvester's law of inertia, signature and index, positive-definiteness
 - Suggested review: homework #11 problems 3(cde), 4(cde), 7, 8.
 - Suggested reading: lecture notes 5.2.2-5.2.4, Lectures 30-31.
 - True/false and miscellaneous tidbits
 - Suggested review: homeworks #2-#11 problem 1.
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