MA 511
Fall 1994
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SUMMARY OF UNITS AND HOMEWORK ASSIGNMENTS

L1: Matrix Operations (Strang, §1.4)
Assgt.: p. 27 (1.4): 2, 5, 8, 12, 17

L2: Linear equations and elimination (Strang, §§1.2–1.3, 2,2)
Assgt.: p. 16 (1.3): 3 (solve only); p. 77 (2.2): 6, 7, 10*a*

L3: Elimination and matrix multiplication (Strang, §§2.2, 1.5)
Assgt.: p. 77 (2.2): 3; p. 39: 4, 6, 7, 11, 18, 19

L4: Special types of matrices (Strang, §§1.6–1.7)
Assgt.: p. 49 (1.6): 1, 2, 5, 6, 10 (first matrix only), 11, 14, 16, 21, 23

L5: Vector spaces and subspaces (Strang, §2.1)
Assgt.: p. 69 (2.1): 4, 5*c*, 7*abcd*, 9

L6: Linear independence and dimension (Strang, §2.3)
Assgt.: p. 87 (2.3): 1, 2*ac*, 4, 7, 12, 21, 23

L7: Subspaces and matrices (Strang, §§2.4–2.5)
Assgt.: p. 99 (2.4): 1, 3, 11, 13

L8: Linear transformations (Strang, §2.6)
Assgt.: p. 125 (2.6): 1, 8–10

L9: Perpendicularity (Strang, §§3.1–3.2)
Assgt.: p. 141 (3.1): 1, 4, 9, 11, 14, 18, 19; p. 151 (3.2) : 1, 3, 8, 10, 12

L10: Orthogonalization (Strang, §3.4)
Assgt.: p. 180 (3.4): 4 (first part only), 5–7, 15

L11: Projections and least squares (Strang, §3.3)
Assgt.: p. 162 (3.3): 3, 7, 12, 18, 19, 21; p. 180 (3.4): 2, 8

L12: Additional properties of subspaces (Strang, §3.6)
Assgt.: p. 205 (3.6): 1, 5, 7 (see 6 for a relevant definition), 8, 9, 11, 16

L13: Properties of determinants (Strang, §§4.1–4.2)
Assgt.: p. 218 (4.2): 1, 3, 4, 6*ad*, 9, 12*cd*

L14: Cofactor expansions and Cramer's rule (Strang, §§4.3–4.4)
Assgt.: p. 228 (4.3): 3(1)(3), 7*a*, 8, 9; p. 238 (4.4): 3

L15: Eigenvalues (Strang, §5.1)
Assgt.: p. 251 (5.1): 1, 3, 6, 7*b*, 10, 14

L16: Diagonal form and similarity (Strang, §§5.2, 5.6)
Assgt.: p. 260 (5.2): 1, 2, 5, 7, 11, 12; p. 315 (5.6): 1, 2, 3, 5, 9

L17: Powers of matrices and difference equations (Strang, §5.3)
Assgt.: p. 272 (5.3): 3, 6, 8, 11, 19

L18: Differential equations and Jordan form (Strang, §5.4)
Assgt.: p. 251 (5.4): 2; p. 286: 1, 5, 8, 20; p. 319 (Review): 5.6, 5.10, 5.17

L19: Spectral Theorem and Schur form (Strang, §§5.5–5.6)
Assgt.: p. 301 (5.5): 16, 7, 11; p. 315 (5.6): 17, 19, 22, 29, 31; p. 319 (Review): 5.28*a*

L20: Positive definite matrices (Strang, §§6.1–6.2)
Assgt.: p. 328 (6.1): 2, 5*a*, 10, 13; p. 337 (6.2): 2, 3, 5, 8

L21: Rayleigh quotients (Strang, §6.4 omitting minimax principles)
Assgt.: p. 352 (6.4): 6, 7, 8, 11(HINT: For the second example set $y_1 = 2x_1$ and $y_2 = x_2$)

L22: Gershgorin's Theorem and Size of matrices (Strang, §7.2, pp. 386–387 from §7.4)
Assgt.: p. 369 (7.2): 1, 2, 3(first sentence only), 5, 7, 9, 10; p. 386 (7.4): 4 (HINT: Read the discussion following 7.4.3)