§6.1 inner (dot) product, Theorem 1; vector length (norm), unit vectors, and distance between two vectors; orthogonal vectors and orthogonal complement; row spaces; Theorems 2 and 3  
   p. 336 - computations: 1, 3, 5, 7, 9, 11, 13, 15, 17, 23; theory: 27, 29, 31  
   #19 - a-T, b-T, c-T, d-F, e-T  
   #20 - a-T, b-F, c-T, d-T, e-T

§6.2 orthogonal sets and bases, Theorems 4 and 5; orthogonal projection onto a subspace; orthonormal sets and bases; Theorems 6 and 7  
   p. 344 - computations: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21; theory: 29, 33  
   #23 - a-T, b-T, c-F, d-F, e-F  
   #24 - a-T, b-F, c-T, d-T, e-T

§6.3 Theorem 8: The Orthogonal Decomposition Theorem; Theorem 9: The Best Approximation Theorem; Theorem 10  
   p. 352 - computations: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19  
   #21 - a-T, b-T, c-F, d-T, e-T  
   #22 - a-T, b-T, c-T, d-F, e-F

§6.4 Theorem 11: The Gram-Schmidt Process (for two vectors)  
   p. 358 - computations: 1, 3, 5, 7  
   #17 - a-F, b-T, c-ignore  
   #18 - a-F, b-T, c-ignore

§6.5 definition of a least-squares solution; normal equations, Theorems 13 and 14  
   p. 366 - computations: 1, 3, 5, 7, 9, 11, 13; theory: 25  
   #17 - a-T, b-T, c-F, d-T, e-T  
   #18 - a-T, b-F, c-T, d-F, e-ignore, f-ignore

§6.6 how to find lines of best fit  
   p. 374 - computations: 1, 3

§4.1 definition and properties of vector spaces and subspaces; Theorem 1; examples of \( \mathbb{P}_n \) and \( M_{p \times q} \)  
   p. 195 - computations: 1, 3, 5, 7, 9, 11, 13, 15, 17; theory: 21, 25, 27, 31  
   #23 - a-ignore, b-F, c-F, d-T, e-ignore  
   #24 - a-T, b-T, c-T, d-F, e-F (consider the missing quantifier “for all”)
§4.2 definitions of null space and column space, Theorems 2 and 3; definition and properties of a linear transformation, kernel, and range
p. 205 - computations: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23; theory: 27, 29, 31, 33a, 35
#25 - a-T, b-F, c-T, d-F, e-T, f-T
#26 - a-T, b-T, c-F, d-T, e-T, f-ignore

§4.3 definitions of linear independence and dependence, Theorem 4; definition of basis, Theorem 5: The Spanning Set Theorem; Theorem 6
p. 213 - computations: 1, 3, 5, 7, 9, 11, 13, 15, 19; theory: 23, 29, 31, 33
#21 - a-F, b-F, c-T, d-F, e-F
#22 - a-F, b-T, c-T, d-F, e-F

§4.4 Theorem 7: The Unique Representation Theorem; coordinates relative to a given basis; change of coordinates matrix; Theorem 8
p. 222 - computations: 1, 3, 5, 7, 9, 11, 13, 27, 29; theory: 17, 19, 21, 23, 31
#15 - a-T, b-F, c-F
#16 - a-T, b-F, c-T

I intend to cover sections 4.5, 4.6, and 4.7 early next week and will update this review sheet accordingly.

“Required” Problems for Wednesday, 8/6 - Be prepared to present a solution to any of the following. Problems grouped in parentheses count as a single presentation.

6.2 9
6.3 13, 17
6.4 (3, 7)
6.5 (3, 7)
6.6 1
4.1 15
4.2 5, 15
4.3 13
4.4 13