

HOMEWORK ASSIGNMENT # 3
Due Wednesday, September 12

1. Apostol §2.6, p. 57, Exercise # 1ace
2. Apostol §2.6, p. 57, Exercise # 3ace
3. Apostol §2.6, p. 57, Exercise # 7
4. Apostol §2.9, p. 62, Exercise # 2ace
5. Apostol §2.9, p. 62, Exercise # 3
6. Apostol §2.9, p. 62, Exercise # 10
7. Apostol §3.5, p. 95, Exercise # 2
8. Apostol §3.5, p. 95, Exercise # 3
9. Apostol §3.5, p. 95, Exercise # 7
10. Apostol §3.5, p. 96, Exercise # 12
11. Apostol §3.5, p. 96, Exercise # 13
12. Apostol §3.5, p. 96, Exercise # 15
13. Determine whether or not S is a subspace of \mathbf{R}^3 in the following examples:
 - (a) $S = \{(x, y, z) \in \mathbf{R}^3 : x = y = z\}$
 - (b) $S = \{(x, y, z) \in \mathbf{R}^3 : x + y = 1\}$
 - (c) $S = \{(x, y, z) \in \mathbf{R}^3 : y = 2x \text{ and } z = 3x\}$
 - (d) $S = \{(x, y, z) \in \mathbf{R}^3 : y = 2x \text{ or } z = 3x\}$

14. Let P_n denote the linear space of all real polynomials of degree at most n . Determine whether or not S is a subspace of P_n in the following examples:

(a) $S = \{f \in P_n : f(1) = 0\}$

(b) $S = \{f \in P_n : f(0) = f(2)\}$

(c) $S = \{f \in P_n : f(x) \geq 0 \text{ for all } x\}$

(d) $S = \{f \in P_n : f''(0) + f'(0) - f(0) = 0\}$