C: ANSWERS TO SELECTED PROBLEMS

Chapter 7.1, Systems of Linear Inequalities

1. It is not a solution.
3. Draw a dashed line, slope –2, containing (0,0) and shade the half-plane on right side of line.
5. Draw a solid line, intercepts (0,5) and (–2,0), and shade the half-plane on right side of line.
7. Draw a vertical line, solid, through (0,0), and shade the half-plane on right side of line.
9. Corner point: $\left(\frac{-1}{2}, \frac{3}{2}\right)$.
11. Corner points: $\left(\frac{-1}{2}, \frac{3}{2}\right)$, (2,4), (4,4), (1,0), (4,0).
13. No corner points exist.
15. Corner points: (0,0), (0,5), (1,5), (6,0).
17. Corner points: (0,0), (0,5), (4,0), (2,3).
19. Corner points: (0,0), (0,7), (2,6), (5,2), (6,0).
21. Corner points: (0,9), (1,6), (6,1), (8,0).
23. Corner points: (0,9), (2,5), (5,1), (8,0).
25. Corner points: (0,9), (1,5), (3,2), (8,0).
27. Corner points: (0,3), (5,1/2), (5,–2), (0,–2).
29. No corner points, empty solution set.

Chapter 7.2, Finding an Optimal Value

1. Max = 10 at $x = 2$ and $y = 2$, Min = –14/3 at $x = –4/3$ and $y = –2/3$.
3. Max = 168 at $x = 0$ and $y = 6$, Min = 0 at $x = 0$ and $y = 0$.
5. Max = 152 at $x = 7$ and $y = 0$, Min = 32 at $x = 0$ and $y = 4$.
7. Max = 11 at $x = 1$ and $y = 5$.
9. Max = 22 at $x = 2$ and $y = 3$.
11. Max = 30 at $x = 2$ and $y = 6$.
13. Min = 22 at $u = 6$ and $v = 1$.
15. Min = 15 at $a = 5$ and $b = 1$.
17. Max = 7 at $x = 5$ and $y = –2$, Min = –3 at $x = 0$ and $y = 3$.
19. Max = 22/7 at $x = 24/7$ and $y = –2/7$, Min = –28/3 at $x = 1/6$ and $y = 19/2$.

Chapter 7.3, Solving Linear Programming Problems Graphically

1. Max = \$3350, 25 chairs and 9.5 sofas.
3. Min = \$75,000, 3750 of A and 2500 of B.
5. Max = 5156.25, 1875 A and 1875 B.
7. Max = \$8,000, 80 corn and 160 oats.
9. Min = \$36 $\frac{12}{13}$, 1 $\frac{11}{13}$ soybean, 1 $\frac{11}{13}$ oats.
11. Min = \$520,000, 12 teachers and 8 aides.

Chapter 7.4, Chapter Review

1. Corner points: (0,9), (2,5), (5,1), (8,0).
3. Corner points: (0,2), (0,7), (6,2), (1,7).
5. Max = 36 at $x = 10$ and $y = 0$, Min = –12 at $x = 2$ and $y = 0$.
7. Min = 6 $\frac{8}{19}$ at $x = \frac{24}{19}$ and $y = \frac{98}{19}$.
9. Min = \$138,000, 2500 tons A, 6000 tons B.
11. Min = \$760 thousand, 31 A and 12 B.