

Chapter 4 Homework problems
Compiled by Joe Kahlig

Section 4.1

$$\begin{array}{r}
 1. \quad (a) \quad \begin{array}{ccccccc|c}
 x & y & z & s_1 & s_2 & s_3 & f & \\
 0 & 1 & 2 & 1 & 0 & 0 & 0 & 40 \\
 1 & 1 & 2 & 0 & 1 & 0 & 0 & 60 \\
 1 & 0 & 1 & 0 & 0 & 1 & 0 & 30 \\
 \hline
 1 & -2 & -1 & 0 & 0 & 0 & 1 & 0
 \end{array} \\
 \\
 (b) \quad \begin{array}{ccccccc|c}
 x & y & z & s_1 & s_2 & s_3 & f & \\
 2 & 1 & 1 & 1 & 0 & 0 & 0 & 14 \\
 4 & 2 & 3 & 0 & 1 & 0 & 0 & 28 \\
 0 & 0 & 1 & 0 & 0 & 1 & 0 & 10 \\
 \hline
 -3 & -6 & 5 & 0 & 0 & 0 & 1 & 0
 \end{array}
 \end{array}$$

2. (a) pivot row 1 column 2
 (b) $x = 4, y = 0, s_1 = 2, s_2 = 0, s_3 = 0, f = 1$
 (c) no solution
 (d) pivot row 3 column 2
 (e) pivot row 2 column 3
 (f) $x = 6, y = 5, z = 0, s_1 = 0, s_2 = 7, s_3 = 0, P = 29$
 (g) pivot row 1 column 4
 (h) pivot row 3 column 1
 (i) pivot row 2 column 5
3. (a) $x = 0, y = 5, z = 3, s_1 = -9, s_2 = 0, s_3 = 0, P = 40$
 (b) not correct since slack variable is negative.
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4. (a) $x = 0, y = 35, z = 12.5, s_1 = 0, s_2 = 0, s_3 = 37.5, f = 82.5$
 (b) $x = 15, y = 20, z = 27, s_1 = 0, s_2 = 0, s_3 = 0, f = 1257$
 (c) $x = 5, y = 0, z = 0, s_1 = 0, s_2 = 0, s_3 = 10, f = 30$
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5. (a) 63 boxes of Sweet tooth
 134 boxes of sugar dandy
 0 boxes of Dandy delite
 (b) 7 lbs of fruit
 (c) 1244
6. (a) 150 sprinkle umbrellas
 0 storm umbrellas
 75 hurrican umbrellas
 (b) 275 lbs of metal
 (c) \$350
 (d) yes another solutions is
 300 sprinkle umbrellas
 0 storm umbrellas
 0 hurrican umbrellas
 will have 200 lbs of metal left over and
 300 pounds of wood left over
7. (a) 0 executive desks
 9 office desks
 0 student desks

- (b) 7 cabinet hours
 1 crafting hours
 (c) 800
8. (a) 0 colonial houses
 50 split-level houses
 0 ranch-style houses
 (b) 30,000 labor hours
 5 acres
 (c) none
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