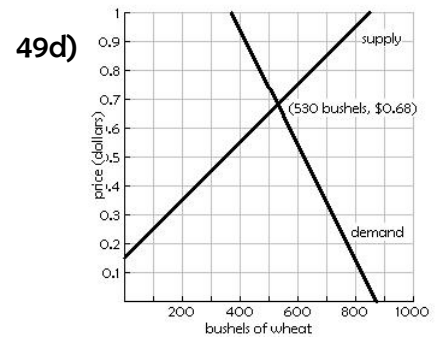
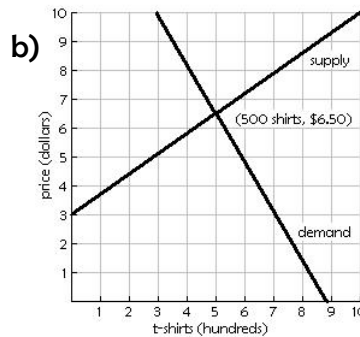


Exercise 4-1

- 1] B, no solution      3] A, (-3, 1)      5] (3, 2)      7] (2, 4)      9] no solution, parallel  
 11] (4, 5)      13] (1, 4)      15] (2, -3)      17] (8, 6)      19] (1, -5)      21] no solution, inconsistent  
 23]  $\left(-\frac{4}{3}, 1\right)$       25] infinitely many solutions, dependent      27] (4000, 280)      29]  $\left(\frac{4}{7}, \frac{3}{7}\right)$

- 31] (1.1, 0.3)      33]  $\left(-\frac{5}{4}, \frac{5}{3}\right)$       35] (2.41, 1.12)      37] (-3.31, -2.24)

- 47] a)  $p = \$6.50, q = 500$  t-shirts  
 49] a)  $p = 0.001q + 0.15$   
 b)  $p = -0.002q + 1.74$   
 c)  $p = \$0.68, q = 530$  bushels



Exercise 4-4

- 1]  $\begin{bmatrix} -1 & 0 \\ 5 & -3 \end{bmatrix}$       3]  $\begin{bmatrix} 2 & 0 & 3 \\ 7 & 7 & -5 \end{bmatrix}$       5] not defined      7]  $\begin{bmatrix} 5 & -7 \\ -5 & 2 \\ 0 & 4 \end{bmatrix}$   
 9]  $\begin{bmatrix} 5 & -10 & 0 & 20 \\ -15 & 10 & -5 & 30 \end{bmatrix}$       11] [10]      13]  $\begin{bmatrix} 5 \\ -3 \end{bmatrix}$       15]  $\begin{bmatrix} 2 & 4 \\ 1 & -5 \end{bmatrix}$       17]  $\begin{bmatrix} 1 & -5 \\ -2 & -4 \end{bmatrix}$   
 19] [-7]      21]  $\begin{bmatrix} -15 & 6 \\ -20 & 8 \end{bmatrix}$       23] [11]      25]  $\begin{bmatrix} 3 & -2 & -4 \\ 6 & -4 & -8 \\ -9 & 6 & 12 \end{bmatrix}$       27]  $\begin{bmatrix} -12 & 12 & 18 \\ 20 & -18 & -6 \end{bmatrix}$   
 29] not defined      31]  $\begin{bmatrix} 11 & 2 \\ 4 & 27 \end{bmatrix}$       33]  $\begin{bmatrix} 6 & 4 \\ 0 & -3 \end{bmatrix}$       35]  $\begin{bmatrix} -1.3 & -0.7 \\ -0.2 & -0.5 \\ 0.1 & 1.1 \end{bmatrix}$

- 45]  $a = -1, b = 1, c = 3, d = -5$       47]  $x = 2, y = -3$       55] 

	Guitar	Banjo	
\$33	\$26	Materials	
\$57	\$77	Labor	

**Exercise 4-2**

1]  $A : 2 \times 3; C : 1 \times 3$

2]  $B : 3 \times 3; D : 2 \times 1$

7]  $a_{12} = -4, a_{23} = -5$

8]  $a_{21} = 6, a_{13} = 0$

11]  $\left[ \begin{array}{cc|c} 4 & -6 & -8 \\ 1 & -3 & 2 \end{array} \right]$

13]  $\left[ \begin{array}{cc|c} -4 & 12 & -8 \\ 4 & -6 & -8 \end{array} \right]$

15]  $\left[ \begin{array}{cc|c} 1 & -3 & 2 \\ 8 & -12 & -16 \end{array} \right]$

17]  $\left[ \begin{array}{cc|c} 1 & -3 & 2 \\ 0 & 6 & -16 \end{array} \right]$

19]  $\left[ \begin{array}{cc|c} 1 & -3 & 2 \\ 2 & 0 & -12 \end{array} \right]$

21]  $\left[ \begin{array}{cc|c} 1 & -3 & 2 \\ 3 & -3 & -10 \end{array} \right]$

25]  $x_1 = 3, x_2 = 1$

27]  $x_1 = 2, x_2 = 1$

29]  $x_1 = 2, x_2 = 4$

31] no solution

33]  $x_1 = 1, x_2 = 4$

35] infinitely many solutions:  $x_1 = 2t - 3, x_2 = t; t \in \mathbb{R}$

37] infinitely many solutions:  $x_1 = \frac{1}{2}t + \frac{1}{2}, x_2 = t; t \in \mathbb{R}$

39]  $x_1 = -1, x_2 = 3$

41] no solution

43] infinitely many solutions:  $x_1 = \frac{3}{2}t + 2, x_2 = t; t \in \mathbb{R}$

**Exercise 4-3**

1] Yes

2] No

3] No

4] Yes

5] No

6] Yes

7] Yes

8] No

10]  $x_1 = -2, x_2 = 0, x_3 = 1, x_4 = 3$

11]  $x_1 = 2t + 3, x_2 = -t - 5, x_3 = t; t \in \mathbb{R}$

13] no solution

19]  $\left[ \begin{array}{ccc|c} 1 & 0 & 0 & -5 \\ 0 & 1 & 0 & 4 \\ 0 & 0 & 1 & -2 \end{array} \right]$

21]  $\left[ \begin{array}{ccc|c} 1 & 0 & 2 & -5/3 \\ 0 & 1 & -2 & 1/3 \\ 0 & 0 & 0 & 0 \end{array} \right]$

26]  $x_1 = -3, x_2 = 4, x_3 = -2$

30] no solution

34] infinitely many solutions:  $x_1 = 2t + 3, x_2 = -3t + 5, x_3 = t; t \in \mathbb{R}$

38] no solution

42]  $x_1 = -1, x_2 = 1, x_3 = 3$

**Exercise 4-5**

15]  $\begin{bmatrix} -1 & 0 \\ -3 & 1 \end{bmatrix}$

16]  $\begin{bmatrix} 1 & -5 \\ 0 & -1 \end{bmatrix}$

17]  $\begin{bmatrix} 3 & -2 \\ -1 & 1 \end{bmatrix}$

18]  $\begin{bmatrix} 3 & -1 \\ -5 & 2 \end{bmatrix}$

19]  $\begin{bmatrix} 7 & -3 \\ -2 & 1 \end{bmatrix}$

20]  $\begin{bmatrix} 1 & -1 \\ -1 & 2 \end{bmatrix}$

25]  $\begin{bmatrix} -2 & -3 \\ 3 & 4 \end{bmatrix}$

26]  $\begin{bmatrix} -4 & 3 \\ -5 & 4 \end{bmatrix}$

27] does not exist

28] does not exist

29]  $\begin{bmatrix} 1.5 & -0.5 \\ -2 & 1 \end{bmatrix}$

30]  $\begin{bmatrix} -0.5 & -0.75 \\ -0.5 & -1.25 \end{bmatrix}$

## Chapter 4 Review

1] (4, 4)      2] (4, 4)      3]  $\begin{bmatrix} 3 & 3 \\ 4 & 2 \end{bmatrix}$       4] not defined      5]  $\begin{bmatrix} -3 & 0 \\ 1 & -1 \end{bmatrix}$       6]  $\begin{bmatrix} 4 & 3 \\ 7 & 4 \end{bmatrix}$

7] not defined      8]  $\begin{bmatrix} 5 \\ 5 \end{bmatrix}$       9]  $\begin{bmatrix} 2 & 3 \\ 4 & 6 \end{bmatrix}$       10] [8]      11] not defined      12]  $\begin{bmatrix} -2 & 3 \\ 3 & -4 \end{bmatrix}$

13]  $x_1 = 9, x_2 = -11$       14]  $x_1 = 9, x_2 = -11$       15]  $x_1 = 9, x_2 = -11; x_1 = 16, x_2 = -19; x_1 = -2, x_2 = 4$

16] not defined      17]  $\begin{bmatrix} 10 & -8 \\ 4 & 6 \end{bmatrix}$       18]  $\begin{bmatrix} -2 & 8 \\ 8 & 6 \end{bmatrix}$       19]  $\begin{bmatrix} -2 & -1 & -3 \\ 4 & 2 & 6 \\ 6 & 3 & 9 \end{bmatrix}$

20] [9]      21]  $\begin{bmatrix} 10 & -5 & 1 \\ -1 & -4 & -5 \\ 1 & -7 & -2 \end{bmatrix}$       22]  $\begin{bmatrix} -\frac{5}{2} & 2 & -\frac{1}{2} \\ 1 & -1 & 1 \\ \frac{1}{2} & 0 & -\frac{1}{2} \end{bmatrix}$

23] a)  $x_1 = 2, x_2 = 1, x_3 = -1$  b)  $x_1 = -5t - 12, x_2 = 3t + 7, x_3 = t; t \in \mathbb{R}$       27]  $\begin{bmatrix} -0.9 & -0.1 & 5 \\ 0.8 & 0.2 & -4 \\ 0.1 & -0.1 & 0 \end{bmatrix}$