

Lesson 3.1.3

3-37. See below:

- a. Possibilities include $2x^2 + 5x - 3$ and $10x^2 + 25x - 15 = 0$.
- b. Students should factor the equation from part (a), which, in the case of the possible answers given above, would result in $(2x - 1)(x + 3) = 0$ or $5(2x - 1)(x + 3) = 0$.
- c. $x = 0.5$ or $x = -3$

3-38. See below:

- a. $x = -5$ or 4
- b. $(2, -5)$
- c. $x = -2$ or $\frac{1}{2}$
- d. $x = -\frac{2}{3}$
- e. $x = 2$
- f. $(-5, 1)$ or $(20, 1)$

3-39. See below:

- a. Answers vary.
- b. First version results in $\frac{\sqrt{U}}{2y} = 5$ and $3\sqrt{U} - 3y = 27$; Second version results in $\frac{\sqrt{U}}{2y} = 5$ and $3U - 3y = 27$; Students are likely to decide that the system resulting from the second version of U is simpler to solve.
- c. $y = 1, U = 10$
- d. Solve $\sqrt{x^2 - 15} = 10$ for x . The solutions to the original system are $(20, 1)$ and $(-5, 1)$.

3-40. See below:

- a. $U = m^2 + 5m - 24$

b. $U = y^7$

c. Substitution would not be useful.

3-41. See below:

a. $y = \frac{5}{2}x - 4$

b. $y = \frac{2}{x} - 3$

3-42. Students can isolate the x by factoring it out of the left side of the equation and then dividing by the factor that remains $x(y + 3) = 2$, $x = \frac{2}{y+3}$

3-43. All three equations can be compared by solving each for x or solving each for y . The first and third equations are different lines with different growth and intercepts, and different solutions. The second and third equations have the same solutions except for the point $(1, -2)$.

3-44. See below.

- a. No, they are not equivalent, as the values in the table would be different and the graph of the second equation is a vertical stretch of the first.
- b. Yes, the solutions to both are $x = 3$ and $x = 5$. If the first equation is multiplied by 2, the result is the second.



3-45. See below:

a. $n = -2$

b. $x = -4, 1$

3-46. See below:

- a. equivalent
- b. equivalent
- c. equivalent
- d. not equivalent
- e. not equivalent

f. not equivalent

3-47. See below:

- a. equal
- b. equal
- c. equal
- d. equal if $a = 0$ or $b = 0$
- e. equal if $x = 1$
- f. equal if $x = 5$ and $y = 2$

3-48. $10 = 15m + b$ and $106 = 63m + b$; $m = 2$, $b = -20$, $t(n) = 2n - 20$

3-49. See below:

- a. $t(n) = 450000(1.03)^n$
- b. They will make \$154,762.37 or 34.39% profit.

3-50. $5xy(x + 2)(x + 5)$

3-51. See below:

- a. They both have the solution $x = 2$.
- b. She divided both sides of the equation by 150 and used the Distributive Property.
- c. Answers vary. One way to rewrite the equation is $t - 2 = 5$. $t = 7$.

3-52. See below:

- a. $-6, -14, -22, -30$, $t(n) = 18 - 8n$
- b. $\frac{2}{5}, \frac{2}{25}, \frac{2}{125}, \frac{2}{625}$, $t(n) = 50\left(\frac{1}{5}\right)^n$
- c. Sequences and equations vary.

3-53. See below:

- a. $5^{1/2}$
- b. $9^{1/3}$ or $3^{2/3}$
- c. $17^{x/8}$

d. $7x^{3/4}$

3-54. See below:

a. $x^2 + y^2 = 36$

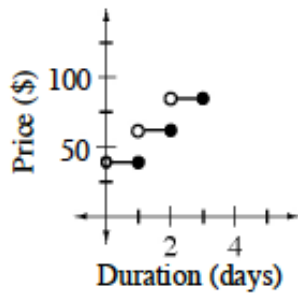
b. $(x - 2)^2 + (y + 3)^2 = 36$

c. $(x - 4)^2 + (y + 5)^2 = 36$

2-55. $\frac{741.8-25}{1800-0} = 0.4$ °F/sec

2-56. See below:

a. See graph below.



b. Shift the graph up \$11.