

Problem-Solving Strategy: Write an Equation

A natural outcome of recognizing mathematical patterns and organizing data is to write an equation. Look at a set of data or read a word problem to determine which values are constants and which values vary. Figure out the dependent and independent variables in order to write an equation to reflect the given situation.

Real-World Example

Telketic Cell is offering the following cell phone plan. The first 60 minutes of phone use per month costs \$20. Additional minutes, up to and including 400 minutes, the charge is \$20 plus 10 cents a minute. For any number of minutes used past 400, the charge is a flat fee of \$80.

a. Write a piecewise function to represent the plan.

Separate the domain as described. Pay careful attention to the category in which each boundary belongs. Write an expression for each condition.

$$f(x) = \begin{cases} 20 & \text{if } 0 \leq x \leq 60 \\ 20 + 0.10(x - 60) & \text{if } 60 < x \leq 400 \\ 80 & \text{if } x > 400 \end{cases}$$

b. Find the charge for 325 minutes of phone use.

325 minutes fits the $60 < x \leq 400$ portion of the domain. Therefore, the charge is $20 + 0.10(325 - 60)$ or \$46.50.

c. When Anna uses more than 400 minutes of phone time in a month, she feels as if she does not get her money's worth. If \$80 is more than \$20 plus 10 cents a minute she has used. For what amount of phone use does Anna feel the \$80 charge is fair? Solve $20 + 0.10(x - 60) = 80$ to find $x = 660$. Anna feels the \$80 charge is fair for any number of minutes she uses over 660 minutes.

Practice

Solve each problem by writing an equation.

- Isaac has been playing a massively multiplayer online game (MMOG) for the last two months. In the game, players are awarded levels of experience based on their actions in the game. For the first 10 hours of play, Isaac leveled 3 times each hour. For the next 5 hours of play, he only leveled once an hour. For the final nine hours of play, Isaac leveled once every three hours.
 - Write a piecewise function L to show level as a function of time t .
 - What level had Isaac reached after 18 hours of play? **level 36**

- The area of a rectangular parking lot is to be 20,000 square feet. The table shows some possible dimensions for the lot. Write an equation that can be used to find the width of the parking lot for any given length.

Length (ft)	Width (ft)
20	1000
50	400
100	200
200	100
400	50

- Iceland spent approximately 8.8% of its Gross Domestic Product on public health expenditures in 2006, the highest percentage of all countries. If Iceland had a GDP of \$11,380,000,000 in 2006, write an equation to show how much money was spent on public health expenditures.

$$0.088 = \frac{x}{11,380,000,000}$$

Extra Practice

Lesson 1-1 Expressions and Formulas (pp. 5-10)

Evaluate each expression if $q = \frac{1}{2}$, $r = 1.2$, $v = -6$, and $t = 5$.

- $qr - vt$ **30.6**
- $qr \div v \cdot t$ **-0.5**
- $qvrt$ **-18**
- $qr + vt$ **-29.4**
- $\frac{3q}{2v}$ **-2.25**
- $\frac{5qr}{t}$ **0.6**
- $\frac{2t(vt - 1)}{t}$ **-12**
- $\frac{4q^2v + 1}{t - 1}$ **-0.5**

Evaluate each expression if $a = -0.5$, $b = 4$, $c = 5$, and $d = -3$.

- $3b + 4d$ **0**
- $ab^2 + c$ **-3**
- $bc + d + a$ **26**
- $7ab - 3d$ **-5**
- $ad + b^2 - c$ **12.5**
- $\frac{4a + 3c}{3b}$ **13**
- $\frac{3ab^2 - b^2}{a}$ **-6**
- $\frac{5a + ad}{bc}$ **-0.05**

Lesson 1-2

Properties of Real Numbers (pp. 11-17)

Name the sets of numbers to which each number belongs. (Use N, W, Z, Q, I, and R.)

- 8.2 **Q, R**
- 9 **Z, Q, R**
- $\sqrt{36}$ **N, W, Z, Q, R**
- $\frac{1}{3}$ **Q, R**
- $\sqrt{2}$ **I, R**
- 0.24 **Q, R**

Name the property illustrated by each equation. 7. Comm. (\times) 9. Distributive

- $(4 + 9a)2b = 2b(4 + 9a)$ 8. $3(\frac{1}{3}) = 1$ **Mult. Inv.**
- $10(-3b) + 3b = 0$ **Add. Inv.**
- $\frac{1}{k} \cdot k + 0 = k$ **Add. Idem.**
- $9(a(3 - 2)) = a \cdot 3 - a \cdot 2$
- $15(-3b) + 3b = 0$ **Add. Inv.**
- $\frac{1}{k} \cdot k + 0 = k$ **Add. Idem.**
- $(2b)^2 = 2(ab)^2$ **Assoc. (\times)**
- $13. 7r + 9t + 2r - 7t - 9t + 2t$ 14. $6(2a + 3b) + 5(3a - 4b)$ **27a - 2b** 15. $4(3x - 5y) - 8(2x + y)$
- $0.2(5m - 8) + 0.3(6 - 2m)$ 17. $\frac{1}{2}(7p + 3q) + \frac{3}{4}(9p - 4q)$ **8p - \frac{3}{2}q** 18. $\frac{1}{5}(3v - 2w) - \frac{1}{5}(7v - 2w)$ **v - \frac{5}{5}w**
- $0.4m + 0.2$

Lesson 1-3

Solving Equations (pp. 18-25)

Write an algebraic expression to represent each verbal expression. 2. $21n + (-9)$

- twelve decreased by the square of a number **$12 - n^2$** 2. twice the sum of a number and negative nine
- the product of the square of a number and 6 **$6n^2$** 4. the square of the sum of a number and 11 **$(n + 11)^2$**
- Name the property illustrated by each statement.
 - If $a + 1 = 6$, then $3(a + 1) = 3(6)$. **Multiplication ($=$)**
 - If $x + (4 + 5) = 21$, then $x + 9 = 21$. **Substitution ($=$)**
 - If $7x = 42$, then $7x - 5 = 42 - 5$. **Subtraction ($=$)**
 - If $3 + 5 = 8$ and $8 = 2 \cdot 4$, then $3 + 5 = 2 \cdot 4$. **Transitive ($=$)**
- Solve each equation. Check your solution.
 - $5t + 8 = 88$ **16**
 - $27 - x = -4$ **31**
 - $8w - 3 = 5(2w + 1)$ **-4**
 - $3(4 - 2) = k + 4$ **5**
 - $8q - \frac{q}{5} = 46$ **6**
 - $-\frac{2}{7}r + \frac{3}{7} = 5 - 16$
 - $11. \frac{3}{4}y = \frac{2}{3}y + 5$ **60**
 - $14. 0.5z + 10 = z + 4$ **12**
 - $17. d - 1 = \frac{1}{2}(d - 2)$ **0**
- Solve each equation or formula for the specified variable.
 - $C = \pi r$, for r **$r = \frac{C}{\pi}$**
 - $19. I = Prt$, for t **$t = \frac{I}{Pr}$**
 - $20. m = \frac{n-2}{n}$, for n **$n = \frac{-2}{m-1}$**

Lesson 1-4 Solving Absolute Value Equations (pp. 27-32)

Evaluate each expression if $x = -5$, $y = 3$, and $z = -2.5$.

- $|2x| - 10$
- $|-3y| + 9$
- $|2x + y| + 7$
- $|y + 5z| + 9.5$
- $-|x + z| - 7.5$
- $8 - |5y - 3| - 4$
- $2|x| - 4|2 + y| - 10$
- $|x + y| - 6|z| - 13$
- $|z + 1| = 7$ (6, -8)
- $|a - 6| = 10$ (-4, 16)
- $|x - 5| = 22$ (-6, 16)
- $|p + 1| + 10 = 5$ \emptyset
- $|3b - 10| = 2b$ (2, 10)
- $|2c + 3| - 15 = 0$ (-9, 6)
- $7 - |m - 1| = 3$ (-3, 5)
- $2|2d - 7| + 1 = 35$ (-5, 12)
- $|3t + 6| + 9 = 30$ (-9, 5)
- $|4y - 5| + 4 = 7y + 8$ ($\frac{1}{11}$)
- $|2b + 4| - 3 = 6b + 1$ (0)

Lesson 1-5 Solving Inequalities (pp. 33-39)

Solve each inequality. Then graph the solution set on a number line.

- $2x + 5 \leq 7$ ($z \leq 1$)
- $3r - 8 > 7$ ($r > 5$)
- $0.75b < 3$ ($b < 4$)
- $-3x > 6$ ($x < -2$)
- $2(3f + 5) \geq 28$ ($f \geq 3$)
- $-33 > 5g + 7$ ($g < -8$)
- $7a + 5 > 4a - 7$ ($a > -4$)
- $8(2c - 1) > 11c + 22$ ($c > 6$)
- $3(2x - 5) < 5(x - 4)$ ($x < -5$)
- $8(2c - 1) > 11c + 22$ ($c > 6$)
- $2(d + 4) - 5 \geq 5(d + 3)$
- $8 - 3t < 4(3 - t)$ ($t < 4$)
- $-x \geq \frac{x+4}{7}$ ($x \leq -0.5$)
- $\frac{a+8}{4} \leq \frac{7-a}{3}$ ($a \geq -4$)
- $-y < \frac{y+5}{2}$ ($y > -\frac{5}{3}$)
- $5(x - 1) - 4x \geq 3(3 - x)$
- $6k - (4k + 7) > 5 - k$ ($k > 4$)

- $12. |d| \leq -4$
- $17. \left\{ \begin{array}{l} x \geq \frac{7}{2} \\ |x| \geq \frac{7}{2} \end{array} \right.$
- $18. 6k - (4k + 7) > 5 - k$ ($k > 4$)

Lesson 1-6 Solving Compound and Absolute Value Inequalities (pp. 41-46)

Write an absolute value inequality for each of the following. Then graph the solution set on a number line.

- all numbers less than -9 or greater than 9 ($|n| > 9$)
- all numbers between -5.5 and 5.5 ($|n| < 5.5$)
- all numbers greater than or equal to -2 and less than or equal to 2 ($|n| \leq 2$)
- $3m - 2 < 7$ or $2m + 1 > 13$
- $5t + 3 \leq -7$ or $5t - 2 \geq 8$
- $2 < n + 4 < 7$
- $7 \leq 4x + 3 \leq 19$
- $|8y| \leq 16$
- $|a + 3| < 1$
- $|3d + 6| \geq 3$
- $|t - 4| > 1$
- $|4x - 1| < 5$
- $|6w - 3| \geq 9$
- $12 + |2q| < 0$
- $|z + 2| \geq 0$
- $|3h| + 15 < 0$
- $6 - 3 \leq y - 2 \leq 5$
- $4x + 7 < 5$ or $2x - 4 > 12$
- $|7d| \leq -42$
- $|2y - 5| < 3$
- $|6z + 12| > 18$
- $|z + 2| \geq 0$
- $|5n - 16| \geq 4$

948 Extra Practice

Lesson 2-1 Relations and Functions (pp. 61-67)

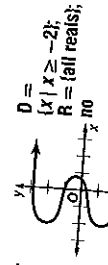
State the domain and range of each relation. Then determine whether each relation is a function. If it is a function, determine if it is one-to-one, onto, both, or neither.

Year	Population
1970	11,605
1980	13,468
1990	15,630
2000	18,140

$D = \{1970, 1980, 1990, 2000\}$; $R = \{11,605, 13,468, 15,630, 18,140\}$; yes; one-to-one equation is a function, is one-to-one, onto, both, or neither. Then state whether it is discrete or continuous. 4-9. See Student Handbook Answer Appendix.

x	y
1	5
2	5
3	5
4	5

$D = \{1, 2, 3, 4\}$;
 $R = \{5\}$; yes;
neither



1. $D = \{1, 2, 3, 4\}$;
 $R = \{5\}$; yes;
neither
2. $D = \{1970, 1980, 1990, 2000\}$; $R = \{11,605, 13,468, 15,630, 18,140\}$; yes; one-to-one equation is a function, is one-to-one, onto, both, or neither. Then state whether it is discrete or continuous. 4-9. See Student Handbook Answer Appendix.
3. $D = \{1, 2, 3, 4\}$;
 $R = \{5\}$; yes;
neither

4. $\{(1, 2), (2, 3), (3, 4), (4, 5)\}$
5. $\{(0, 3), (0, 2), (0, 1), (0, 0)\}$
6. $y = -x$
7. $y = 2x - 1$
8. $y = 2x^2$
9. $y = -x^2$
10. $f(x) = x + 7$ and $g(x) = (x + 1)^2$
11. $g(-2) = 1$
12. $f(a + 2) = a + 9$
13. $g(b - 1) = b^2$

Lesson 2-2 Linear Relations and Functions (pp. 68-74)

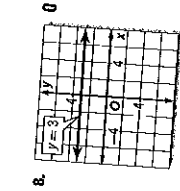
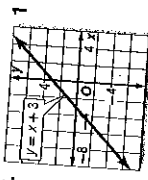
State whether each equation or function is a linear function. Write yes or no. If no, explain your reasoning.

1. $\frac{x}{2} - y = 7$ yes
2. $\sqrt{x} = y + 5$ no
3. $g(x) = \frac{2}{x - 3}$ no
4. $f(x) = 7$ yes
5. $x + 7 = y$
6. $x = -3y$
7. $5x = 7y + 3$
8. $-0.4x = 10$
9. $2x + y = 6$ 3; 6
10. $3x - 2y = -12$ -4; 6
11. $y = -x$ 0; 0
12. $y = -3$ none; -3

Lesson 2-3 Rate of Change and Slope (pp. 76-82)

Find the slope of the line that passes through each pair of points.

1. $(0, 3), (5, 0)$ $-\frac{3}{5}$
2. $(2, 8), (2, -8)$ undefined
3. $(1.5, -1), (3, 1.5)$ $\frac{5}{3}$



Determine the rate of change of each graph.

Find the rate of change for each set of data.

Time (sec)	5	10	15	20
Distance (m)	15	30	45	60

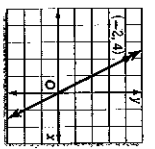
3 m/sec

Weight (lb)	2	4	6	8
Cost (\$)	10	20	30	40

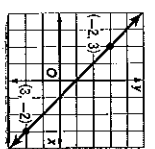
10. \$5 per lb

Lesson 2-4 Writing Linear Equations (pp. 83-89)

Write an equation of each line.



1. $y = -2x$



2. $y = -x + 1$

- Write an equation in slope-intercept form for the line that satisfies each set of conditions.
- slope -1 , passes through $(7, 2)$
 - slope $\frac{3}{4}$, passes through the origin
 - passes through $(1, -3)$ and $(-1, 2)$
 - x -intercept -5 , y -intercept 2
 - passes through $(1, 1)$, parallel to the graph of $2x + 3y = 5$
 - passes through $(0, 0)$, perpendicular to the graph of $2y + 3x = 4$

Lesson 2-5 Scatter Plots and Lines of Regression (pp. 92-98)

Complete parts a-c for each set of data in Exercises 1-3. 1-3. See Student Handbook Answer Appendix.

- Make a scatter plot and a line of fit, and describe the correlation.
- Use two ordered pairs to write a prediction equation.
- Use your prediction equation to predict the missing value.

1. Telephone Costs

Minutes	Cost (\$)
1	0.20
3	0.52
4	0.68
6	1.00
9	1.48
15	?

2. Washington

Year	Population
1960	2,853,214
1970	3,415,244
1980	4,132,535
1990	4,886,659
2000	5,894,121
2010	?

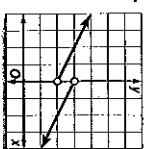
3. Federal Minimum Wage

Year	Wage
1981	\$3.35
1990	\$3.80
1991	\$4.25
1996	\$4.75
1997	\$5.15
2010	?

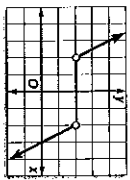
$y = 0.16x + 0.04$ (per min)
 $y = 1.5552x + 2.24878$
 $y = 0.11x + 3.08$

Lesson 2-6 Special Functions (pp. 101-107)

Write the piecewise function shown in each graph.



1. $y = \begin{cases} \frac{1}{2}x + 2 & \text{if } x < 0 \\ \frac{1}{2}x + 3 & \text{if } x > 0 \end{cases}$

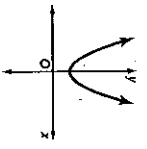


2. $y = \begin{cases} -2x - 2 & \text{if } x < 2 \\ 2 & \text{if } -2 < x < 2 \\ -2x + 6 & \text{if } x > 2 \end{cases}$

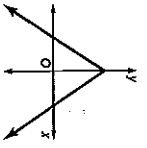
- Graph each function. Identify the domain and range. 3-10. See Student Handbook Answer Appendix.
- $f(x) = [x + 5]$
 - $g(x) = [x] - 2$
 - $h(x) = \begin{cases} x & \text{if } x < -2 \\ 4 & \text{if } x \geq -2 \end{cases}$
 - $g(x) = [x] - 2$
 - $f(x) = -2[x]$
 - $h(x) = |x| - 3$
 - $h(x) = |x - 1|$
 - $g(x) = |2x| + 2$
 - $h(x) = \begin{cases} x & \text{if } x < -2 \\ 4 & \text{if } x \geq -2 \end{cases}$
 - $f(x) = \begin{cases} -3 & \text{if } x \leq 1 \\ -x & \text{if } x > 1 \end{cases}$

Lesson 2-7 Parent Functions and Transformations (pp. 109-116)

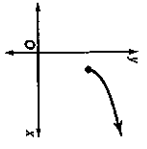
Identify the type of function represented by each graph.



1. quadratic



2. absolute value



3. square root

- Describe the translation of each function. Then graph the function. Appendix for graphs.
- $y = |x| + 3$ Translate the graph of $y = |x|$ up 3.
 - $y = x^2 - 2$ Translate the graph of $y = x^2$ down 2.
 - $y = -x^2$ Reflect the graph of $y = x^2$ over the x -axis.
 - $y = -x$ Reflect the graph of $y = x$ over the x -axis.
 - $y = \frac{3}{2}x$ Dilate the graph of $y = x$ by a scale factor of $\frac{3}{2}$.
 - $y = \frac{2}{x}$ Dilate the graph of $y = \frac{1}{x}$ by a scale factor of 2.

Lesson 2-8 Graphing Linear and Absolute Value Inequalities (pp. 117-121)

Graph each inequality. 1-21. See Student Handbook Answer Appendix.

- $y \geq x - 2$
- $y < -3x - 1$
- $4y \leq -3x + 8$
- $3x > y$
- $x + 2 \geq y - 7$
- $2x < 5 - y$
- $y > \frac{1}{3}x - 8$
- $2y - 5x \leq 8$
- $-2x + 5 \leq \frac{2}{3}y$
- $3x + 2y \geq 0$
- $x \leq 2$
- $\frac{1}{2} \leq x - 1$
- $y - 3 < 5$
- $y \geq -|x|$
- $y \leq |8 - x|$
- $y > |3x - 3|$
- $y \leq |8 - x|$
- $y > |5x - 3|$
- $y + |2x| \geq 4$
- $y \geq |2x - 1| + 5$
- $2x + 6y = 6$ infinite solutions
- $\frac{1}{3}x + y = 1$ solutions
- $2x + 6y = 6$ infinite solutions
- $y = \frac{1}{3}x + 1$
- $y = 5x + 1$ (0, 1)
- $2x + 6y = 6$ infinite solutions
- $y = \frac{1}{3}x + 1$
- $2x - 5y = 0$ consistent, dependent

Lesson 3-1 Solving Systems of Equations by Graphing (pp. 135-141)

Solve each system of equations by graphing or by using a table.

- $x + 3y = 18$
- $x - y = 2$
- $2x + 6y = 6$ infinite solutions
- $x + 2y = 7$ (3, 5)
- $2x - 2y = 10$ no solution
- $\frac{1}{3}x + y = 1$ solutions
- $x + 3y = 0$
- $2x + 6y = 5$ no solution
- $2x - y = 7$
- $2x - \frac{4}{3}y = -2$ (5, 3)
- $6y = \frac{1}{3}x + 1$
- $y = 5x + 1$ (0, 1)
- $2x + 6y = 6$ infinite solutions
- $2x - 2y = 10$ no solution
- $2x - y = 7$
- $2x - \frac{4}{3}y = -2$ (5, 3)
- $6y = \frac{1}{3}x + 1$
- $y = 5x + 1$ (0, 1)
- $2x + 6y = 6$ infinite solutions
- $2x - 2y = 10$ no solution
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- $6y = \frac{1}{3}x + 1$
- $y = 5x + 1$ (0, 1)
- $2x + 6y = 6$ infinite solutions
- $2x - 2y = 10$ no solution
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- $6y = \frac{1}{3}x + 1$
- $y = 5x + 1$ (0, 1)
- $2x + 6y = 6$ infinite solutions
- $2x - 2y = 10$ no solution
- $2x - y = 7$
- $2x - \frac{4}{3}y = -2$ (5, 3)
- $6y = \frac{1}{3}x + 1$
- $y = 5x + 1$ (0, 1)
- $2x + 6y = 6$ infinite solutions
- $2x - 2y = 10$ no solution
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- $y = 5x + 1$ (0, 1)
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- $6y = \frac{1}{3}x + 1$
- $y = 5x + 1$ (0, 1)
- $2x + 6y = 6$ infinite solutions
- $2x - 2y = 10$ no solution
- $2x - y = 7$
- $2x - \frac{4}{3}y = -2$ (5, 3)
- $6y = \frac{1}{3}x + 1$
- $y = 5x + 1$ (0, 1)
- $2x + 6y = 6$ infinite solutions
- $2x - 2y = 10$ no solution
- $2x - y = 7$
- $2x - \frac{4}{3}y = -2$ (5, 3)
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- $y = 5x + 1$ (0, 1)
- $2x + 6y = 6$ infinite solutions
- $2x - 2y = 10$ no solution
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- $6y = \frac{1}{3}x + 1$
- $y = 5x + 1$ (0, 1)
- $2x + 6y = 6$ infinite solutions
- $2x - 2y = 10$ no solution
- $2x - y = 7$
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- $y = 5x + 1$ (0, 1)
- $2x + 6y = 6$ infinite solutions
- $2x - 2y = 10$ no solution
- $2x - y = 7$
- $2x - \frac{4}{3}y = -2$ (5, 3)
- $$

Lesson 3-2 Solving Systems of Equations Algebraically (pp. 143-150)

Solve each system of equations by using substitution.

- $2x + 3y = 10$
 $x + 6y = 32$ (-4, 6)
- $x = 4y - 10$
 $5x + 3y = -4$ (-2, 2)
- $3x - 4y = -27$
 $2x + y = -7$ (-5, 3)
- Solve each system of equations by using elimination.
 - $7x + y = 9$
 $5x - y = 15$ (2, -5)
 - $x + 5t = -17$
 $2t - 6t = -2$ (-7, -2)
 - $6n + 8y = 20$
 $5n - 4y = -26$ (-2, 4)

Solve each system of equations by using either substitution or elimination.

- $2x - 3y = 7$
 $3x + 6y = 42$ (8, 3)
- $2a + 5b = -13$
 $3a - 4b = 38$ (6, -5)
- $7x + y = 35$
 $y = 5x - 19$ (8, 21)
- $3m + 4n = 28$
 $5m - 3n = -21$ (0, 7)
- $2.5x + 1.5y = -2$
 $3.5x - 0.5y = 18$ (4, -8)
- $\frac{1}{2}x - y = -7$ (4, 9)
- $3c + 4d = -1$
 $6c - 2d = 3$ ($\frac{1}{3}$, $-\frac{2}{3}$)
- $x = 2y - 1$
 $4x - 3y = 21$ (9, 5)
- $\frac{2}{7}c - \frac{4}{3}d = 16$
 $\frac{4}{7}c + \frac{8}{3}d = -16$ (14, -9)

Lesson 3-3 Solving Systems of Inequalities by Graphing (pp. 151-157)

Solve each system of inequalities by graphing. 1-12. See Student Handbook Answer Appendix.

- $x \leq 5$
 $y \geq -3$
- $y < 3$
 $y - x \geq -1$
- $x + y < 5$
 $x < 2$
- $y + x \geq 1$
 $y - x \leq 4$
- $x + y \leq 2$
 $y - x \leq 4$
- $y \leq x + 4$
 $y - x \geq 1$
- $y < \frac{1}{3}x + 5$
 $y - x \geq -1$
- $y > 2x + 1$
- $|x| > 2$
 $|y| \leq 5$
- $|x - 3| \leq 3$
 $4y - 2x \leq 6$
- $4x + 3y \geq 12$
 $2y - x \geq -1$
- $y \geq 3$
 $x \leq 2$
- $y \geq -\frac{2}{3}x + 3$
 $(0, 3), (2, 3), (2, 0)$
- $y \geq -1$
 $y \leq x$
 $y \leq -x + 4$
 $(2, 2), (-1, -1), (5, -1)$
- $y \geq \frac{1}{3}x + \frac{7}{3}$
 $4x - y \leq 5$
 $y \geq -\frac{2}{3}x + \frac{1}{2}$
 $(2, 3), (1, -1), (-1, 2)$

Find the coordinates of the vertices of the triangle formed by each system of inequalities. 13-15. See Student Handbook Answer Appendix for graphs.

- $x \leq 3$
 $x \geq 2$
 $y \geq -\frac{2}{3}x + 3$
 $(0, 3), (2, 3), (2, 0)$
- $x \leq 5$
 $y \geq -x + 4$
 $(2, 2), (-1, -1), (5, -1)$
- $x \leq 5$
 $y \geq 2(0, 2), (5, 2), (5, 4)$
 $2x - 5y \geq -10$
 $f(x, y) = 3x + y$
- $y \leq 6(0, 2), (5, 6), (-2, 6)$
 $2x + y \geq 2$
 $f(x, y) = x + y$
- $y \geq 0$
 $y \leq 4(0, 7, 0)$
 $x + 4y \geq 7$
 $2x + y \leq 7$
 $f(x, y) = 2x - y$
- $y \geq 0(0, 0), (2, 3)$
 $3x - 2y \geq 0$
 $x + 3y \leq 11$
 $2x + 3y \leq 16$
 $f(x, y) = 4x + y$
- $x + y \leq 8(-1, 3)$
 $y \geq 5x + 8$ no maximum; -15
 $f(x, y) = 3x - 4y$
- $y \geq 0(0, 0), (2, 3)$
 $3x - 2y \geq 0(5, 2), (8, 0)$
 $x + 3y \leq 11$
 $2x + 3y \leq 16$
 $f(x, y) = 4x + y$

Lesson 3-5 Systems of Equations in Three Variables (pp. 167-173)

Solve each system of equations.

- $4x + 2y - 6z = -38$
 $5x - 4y + z = -18$
 $x + 3y + 7z = 38$ (-3, 2, 5)
- $u + 3v + w = 14$
 $2u - v + 3w = -9$
 $4u - 5v - 2w = -17$ (1, 5, -2)
- $x + y = -6$
 $x + z = -2$
 $y + z = 2$ (-5, -1, 3)
- $5x = 5$
 $6x - 3c = 15$
 $2a + 7c = -5$ (1, 2, -1)
- $2u - 3v = 13$
 $3v + w = -3$
 $4u - w = 2$ (2, -3, 6)
- $4a + 2b - c = 5$
 $2a + b - 5c = -11$
 $a - 2b + 3c = 6$ (1, 2, 3)
- $x + 2y - z = 1$
 $x + 3y + 2z = 7$
 $2x + 6y + z = 8$ (3, 0, 2)
- $2x + y - z = 7$
 $3x - y + 2z = 15$
 $x - 4y + z = 2$ (4, 1, 2)

Lesson 4-1 Introduction to Matrices (pp. 185-191)

State the dimensions of each matrix.

- $\begin{bmatrix} 0 & 3 & -3 & 1 \\ -1 & 4 & 5 & 0 \end{bmatrix}$ 2×4
- $\begin{bmatrix} 0 & -1 & 4 \times 1 \\ 3 & 1 & 7 \\ -5 & 19 & 11 \end{bmatrix}$ 3×2

Identify each element of matrix $A = \begin{bmatrix} 0 & -6 & 2 & 11 \\ 2 & 3 & 0 & 9 \\ 7 & 4 & 3 & 12 \end{bmatrix}$.

- a_{22} 4
- a_{33} 3
- a_{11} 0
- a_{24} 9

Lesson 4-2 Operations with Matrices (pp. 192-199)

Perform the indicated matrix operations. If the matrix does not exist, write impossible. 1-6. See Student Handbook Answer Appendix.

- $\begin{bmatrix} 3 & 5 \\ -7 & 2 \end{bmatrix} + \begin{bmatrix} -2 & 6 \\ 8 & -1 \end{bmatrix}$
- $\begin{bmatrix} 0 & -1 & 3 \\ -2 & 1 & 7 \\ -3 & 19 & 11 \end{bmatrix} + \begin{bmatrix} 5 \\ -2 \\ -3 \end{bmatrix}$
- $\begin{bmatrix} 45 & 36 & 18 \\ 63 & 29 & 5 \end{bmatrix} - \begin{bmatrix} 45 & -2 & 36 \\ 18 & 9 & -10 \end{bmatrix}$
- $1.3 \begin{bmatrix} 3.7 \\ -5.4 \end{bmatrix} + 4.1 \begin{bmatrix} 6.4 \\ -0.8 \\ -6.2 \\ 7.4 \end{bmatrix}$
- $\begin{bmatrix} 6 & -2 \\ 5 & 4 \end{bmatrix} - 2 \begin{bmatrix} 6 & -2 \\ 5 & 4 \end{bmatrix} + 4 \begin{bmatrix} 7 & -6 \\ -4 & 2 \end{bmatrix}$
- $4[-8 \ 2 \ 9] - 3[2 \ -7 \ 6]$

Use matrices A, B, C, D, and E to find the following. 7-14. See Student Handbook Answer Appendix.

- $A = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}, B = \begin{bmatrix} -1 & 0 \\ 0 & -1 \end{bmatrix}, C = \begin{bmatrix} 2 & -2 \\ -3 & 3 \end{bmatrix}, D = \begin{bmatrix} -2 & 2 \\ 3 & -3 \end{bmatrix}, E = \begin{bmatrix} 5 & -3 \\ -2 & 4 \end{bmatrix}$
- $A + B$ 8. $C + D$
- $A - B$ 9. $A - B$
- $D - C$ 10. $4B$
- $E + 2A$ 11. $D - C$
- $E + 2A$ 12. $E + 2A$
- $D - 2B$ 13. $D - 2B$
- $2A + 3E - D$ 14. $2A + 3E - D$

Lesson 4-3 Multiplying Matrices (pp. 200-207)

Find each product, if possible.

- $\begin{bmatrix} -3 & 4 & 1 \\ -1 & 2 \\ 2 \end{bmatrix} \begin{bmatrix} 1 & 1 & 1 \end{bmatrix}$
- $\begin{bmatrix} 2 & -4 \\ 0 & 5 \end{bmatrix} \cdot \begin{bmatrix} 1 & -3 \\ -2 & -1 \\ -10 & -5 \end{bmatrix}$
- $\begin{bmatrix} 1 & 3 \\ -2 & -1 \end{bmatrix} \cdot \begin{bmatrix} 2 & -4 \\ 0 & 5 \end{bmatrix} \begin{bmatrix} 2 & 1 \\ -4 & 3 \end{bmatrix}$
- $\begin{bmatrix} -1 \\ 2 \end{bmatrix} \cdot \begin{bmatrix} 7 & 6 & 1 \\ 2 & -4 & 0 \end{bmatrix}$ not possible
- $\begin{bmatrix} 3 & -2 \\ 4 & 5 \end{bmatrix} \cdot \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} \begin{bmatrix} 3 & -2 \\ 4 & 5 \end{bmatrix}$
- $\begin{bmatrix} 2 & -4 \\ 0 & 5 \end{bmatrix} \cdot \begin{bmatrix} 1 & -3 \\ -2 & -1 \\ -10 & -5 \end{bmatrix}$
- $\begin{bmatrix} 3 & 2 \\ 5 & 2 \end{bmatrix} \cdot \begin{bmatrix} -8 \\ 15 \\ -10 \end{bmatrix}$
- $\begin{bmatrix} 0 & 1 & -2 \\ 5 & 3 & -4 \\ -1 & 0 & 0 \end{bmatrix} \cdot \begin{bmatrix} 1 & -3 & 0 \\ 2 & 0 & -1 \\ 0 & 1 & -2 \end{bmatrix} \begin{bmatrix} 2 & -2 & 3 \\ 11 & -19 & 5 \\ -1 & 3 & 0 \end{bmatrix}$
- $\begin{bmatrix} -1 & 0 & 2 \\ -6 & 5 & -3 \end{bmatrix} \cdot \begin{bmatrix} -2 \\ 1 \\ 1 \end{bmatrix} \begin{bmatrix} 16 \\ -4 \end{bmatrix}$

Lesson 4-4 Transformations with Matrices (pp. 209-217) Answer Appendix

- The vertices of quadrilateral $ABCD$ are $A(1, 1)$, $B(-2, 3)$, $C(-4, -1)$, and $D(2, -3)$. The quadrilateral is dilated so that its perimeter is 2 times the original perimeter.
 - Write the coordinates for $ABCD$ in a vertex matrix.
 - Find the coordinates of the image $A'B'C'D'$.
 - Graph $ABCD$ and $A'B'C'D'$.
- The vertices of ΔMQN are $M(2, 4)$, $Q(6, -5)$, and $N(1, -1)$.
 - Write the coordinates of ΔMQN in a vertex matrix.
 - Write the reflection matrix for reflecting over the line $y = x$.
 - Find the coordinates of $\Delta MQ'N'$ after the reflection.
 - Graph ΔMQN and $\Delta MQ'N'$.
- Write a rotation matrix for rotating ΔMQN 90° counterclockwise about the origin.
 - Find the coordinates of $\Delta MQ'N'$ after the rotation.
 - Graph ΔMQN and $\Delta MQ'N'$.

Lesson 4-5 Determinants and Cramer's Rule (pp. 220-228)

Evaluate each determinant using diagonals.

- $\begin{vmatrix} 2 & -3 & 5 \\ 1 & -2 & -7 \\ -1 & 4 & -3 \end{vmatrix}$ 48
- $\begin{vmatrix} 0 & -1 & 2 \\ 2 & 1 & 0 \\ -2 & 0 & -1 \end{vmatrix}$ -2
- $\begin{vmatrix} 4 & 3 & -2 \\ 2 & 5 & -8 \\ 6 & 4 & -1 \end{vmatrix}$ 14
- $\begin{vmatrix} -3 & 0 & 2 \\ 1 & -2 & -1 \\ 0 & 5 & 0 \end{vmatrix}$ -5
- $\begin{vmatrix} 3 & 2 & -1 \\ 2 & 3 & 0 \\ -1 & 0 & 3 \end{vmatrix}$ 12
- $\begin{vmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{vmatrix}$ 1
- $\begin{vmatrix} 6 & 4 & -1 \\ 2 & 5 & -8 \\ 4 & 3 & -2 \end{vmatrix}$ -14
- $\begin{vmatrix} 6 & 12 & 15 \\ 2 & 9 & 3 \\ 5 & 6 & 3 \end{vmatrix}$ 651

Use Cramer's Rule to solve each system of equations.

- $5x - y = 7$ (1), -2 $8x + 2y = 4$
- $6x + 5z = 7$ (2), $3z - 10d = -4$ (3), 5
- $2x - 7y = 24$ (5), -2 $14. x + y = -3$ (1), -4 $15. 2m - 3t = 3$ (1), -2 $16. x + y = 1$ (-2.5), 3.5
- $-7 + 8t = -21$ $3x - 10y = 43$ $-4m + 9t = -8$ (2), -2 $12. 3a - 5b = 1$ (2), 1 $4 + 3b = 5$

Lesson 4-6 Inverse Matrices and Systems of Equations (pp. 229-235)

Determine whether each pair of matrices are inverses of each other.

- $A = \begin{bmatrix} -7 & -6 \\ 8 & 7 \end{bmatrix}$, $B = \begin{bmatrix} -7 & -6 \\ 8 & 7 \end{bmatrix}$ yes
- $C = \begin{bmatrix} -3 & 4 \\ 2 & -2 \end{bmatrix}$, $D = \begin{bmatrix} -2 & -2 \\ -4 & -3 \end{bmatrix}$ no

Find the inverse of each matrix, if it exists. 3-6. See Student Handbook Answer Appendix.

- $\begin{bmatrix} 2 & 4 \\ 2 & 3 \end{bmatrix}$
- $\begin{bmatrix} 8 & -5 \\ -6 & 4 \end{bmatrix}$
- $\begin{bmatrix} 10 & 3 \\ 5 & -2 \end{bmatrix}$
- $\begin{bmatrix} -3 & 4 \\ -4 & 8 \end{bmatrix}$

Use a matrix equation to solve each system of equations.

- $4c - 3d = -1$ $8. x + 2y - z = 6$ $9. 2a - 3b - c = 4$
 $5c - 2d = 39$ $-2x + 3y + z = 1$ $4a + b + c = 15$
 $(17, 23)$ $x + y + 3z = 8$ $a - b - c = -2$
 $(3, 2, 1)$ $(2, 6, -1, 7, 6, 3)$

Lesson 5-1 Graphing Quadratic Functions (pp. 249-257)

Complete parts a-c for each quadratic function. 1-9. See Student Handbook Answer Appendix.

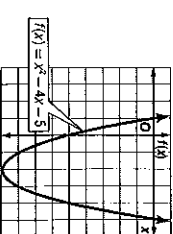
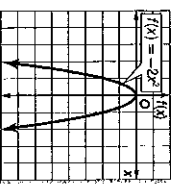
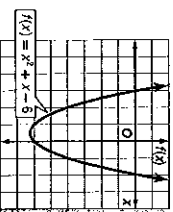
- Find the y-intercept, the equation of the axis of symmetry, and the x-coordinate of the vertex.
- Make a table of values that includes the vertex.
- Use this information to graph the function.

- $f(x) = 6x^2$ $2. f(x) = -x^2$ $3. f(x) = x^2 + 5$
 - $f(x) = -x^2 - 2$ $5. f(x) = 2x^2 + 1$ $6. f(x) = -3x^2 + 6x$
 - $f(x) = x^2 + 6x - 3$ $8. f(x) = x^2 - 2x - 8$ $9. f(x) = -3x^2 - 6x + 12$
- Determine whether each function has a maximum or a minimum value and find that value. Then state the domain and range of the function. 10-15. See Student Handbook Answer Appendix for domains and ranges.
- $f(x) = 9x^2$ min.; 0 $11. f(x) = 9 - x^2$ max.; 9 $12. f(x) = x^2 - 5x + 6$ min.; -0.25
 - $f(x) = 2 + 7x - 6x^2$ max.; $\frac{41}{24}$ $14. f(x) = 4x^2 - 9$ min.; -9 $15. f(x) = x^2 + 2x + 1$ min.; 0

Lesson 5-2 Solving Quadratic Equations by Graphing (pp. 258-266)

Use the related graph of each equation to determine its solutions.

- $x^2 + x - 6 = 0$ -3, 2 $2. -2x^2 = 0$ 3. $x^2 - 4x - 5 = 0$ -1, 5



- between -8 and -7; between 0 and 1 $11.$ between -1 and 0; between 1 and 2
- Solve each equation. If exact roots cannot be found, state the consecutive integers between which the roots are located. 6. between 0 and 1; between 4 and 5
- $x^2 - 2x = 0$ 0, 2 $5. x^2 + 8x - 20 = 0$ -10, 2 $6. -2x^2 + 10x - 5 = 0$
- $-5x + 2x^2 - 3 = 0$ $-\frac{1}{2}, 3$ $8. 3x^2 - x + 8 = 0$ no real solutions $9. -x^2 + 2 = 7x$
- $4x^2 - 4x + 1 = 0$ 0.5 $11. 6x + 1 = 3x^2$ $12. x^2 = -9x$ 0, -9

Lesson 5-3**Solving Quadratic Equations by Factoring** (pp. 268-275)

Solve each equation by factoring. 11. -1, 5, 0, 25

- $x^2 + 7x + 10 = 0$
- $3x^2 = 75x$
- $2x^2 + 7x = 9$
- $8x^2 = 48 - 40x$
- $5x^2 = 20x$
- $16x^2 - 64 = 0$
- $24x^2 - 15 = 2x$
- $x^2 = 72 - x - 9$
- $4x^2 + 9 = 12x$
- $2x^2 - 8x = 0$
- $8x^2 + 10x = 3$
- $12x^2 - 5x = 3$
- $x^2 + 9x + 14 = 0$
- $9x^2 + 1 = 6x$
- $6x^2 + 7x = 3$
- $x^2 - 4x = 21$

Write a quadratic equation in standard form with the given roots.

- $2, 1$
- $-3, 4$
- $x^2 - 3x + 2 = 0$
- $-3, 4$
- $x^2 - x - 12 = 0$
- $-1, -7$
- $x^2 + 8x + 7 = 0$
- $-1, -\frac{1}{2}$
- $2x^2 + x - 1 = 0$
- $-5, \frac{1}{4}$
- $4x^2 + 19x - 5 = 0$
- $-\frac{1}{3}, -\frac{1}{2}$
- $\frac{1}{3}, -\frac{2}{3}$
- $x^2 - 4x = 21$
- $-3, 7$

Lesson 5-4**Complex Numbers** (pp. 276-282)

Simplify.

- $\sqrt{-289}$
- $\sqrt{\frac{25}{121}}$
- $\sqrt{-625}$
- $(6i)(-2i)(11i)$
- $(7i)^2 - 49$
- $i^{17} \cdot i^{12} \cdot i^{26} - i$
- $(\sqrt{-8})(\sqrt{-12}) - 4\sqrt{6}$
- $-i^{22} - 1$
- $(14 - 5i) + (-8 + 19i)$
- $(7i) - (2 + 3i) - 2 + 4i$
- $(5 + 8i)^2 - 28 + 96i$
- $(7 + 3i)(7 - 3i)$
- $\frac{3}{6 - 2i} - \frac{9 + 3i}{20}$
- $\frac{5i}{3 + 4i} - \frac{4 - 3i}{5}$
- $\frac{4x^2}{49} + 6 = 3 \pm \frac{7\sqrt{3}}{2}$
- $\frac{1}{2}x^2 + 1 = 0 \pm \frac{\sqrt{2}}{2}$

Solve each equation.

- $x^2 + 8 = 3 \pm \sqrt{5}$
- $12 - 9x^2 = 38 \pm \frac{\sqrt{26}}{3}$
- $x^2 + 20x + c = 225$
- $x^2 + 20x + c = 100$
- $(6 + 8i)^2 - 28 + 96i$
- $x^2 - 11x + c = \frac{121}{4}$
- $x^2 - \frac{2}{3}x + c = \frac{9}{25}$
- $x^2 - 3x + c = \frac{1}{4}$
- $x^2 + 5x = 0$
- $3x^2 - 16x - 35 = 0$
- $x^2 + 7x + 13 = 0$
- $x^2 - 12x + 36 = 0$
- $x^2 + 14x - 1 = 0$
- $x^2 + 8x - 84 = 0$
- $x^2 - 11x - 4 = 0$
- $x^2 + 3x - 8 = 0$
- $x^2 + 20x + 75 = 0$
- $x^2 + 2x - 63 = 0$
- $5x^2 - 8x + 2 = 0$
- $8x^2 + 13x - 4 = 0$
- $4x^2 - 32x + 15 = 0$
- $x^2 - 7x + 5 = 0$
- $3x^2 - 12x + 4 = 0$
- $x^2 - 5x - 10 = 0$
- $x^2 - 5x - 24 = 0$

Lesson 5-5**Completing the Square** (pp. 284-290)Find the value of c that makes each trinomial a perfect square. Then write the trinomial as a perfect square. 1-8. See Student Handbook Answer Appendix for perfect squares.

- $x^2 - 4x + c = 4$
- $x^2 + 20x + c = 100$
- $x^2 - 11x + c = \frac{121}{4}$
- $x^2 - \frac{2}{3}x + c = \frac{9}{25}$
- $x^2 + 30x + c = 225$
- $x^2 + \frac{2}{3}x + c = \frac{9}{25}$
- $x^2 - 3x + c = \frac{1}{4}$
- $x^2 - 3x + c = \frac{9}{25}$

Solve each equation by completing the square. 9-29. See Student Handbook Answer Appendix.

- $x^2 + 3x - 4 = 0$
- $3x^2 - 16x - 35 = 0$
- $x^2 - 6x + 11 = 0$
- $3x^2 + 5x + 6 = 0$
- $3x^2 - 11x - 4 = 0$
- $x^2 + 3x - 8 = 0$
- $x^2 + 20x + 75 = 0$
- $x^2 + 5x = 0$
- $x^2 + 7x + 13 = 0$
- $x^2 - 12x + 36 = 0$
- $x^2 + 14x - 1 = 0$
- $x^2 + 8x - 84 = 0$
- $x^2 - 11x - 4 = 0$
- $x^2 - 5x - 10 = 0$
- $x^2 - 5x - 24 = 0$
- $x^2 + 2x - 63 = 0$
- $5x^2 - 8x + 2 = 0$
- $8x^2 + 13x - 4 = 0$
- $4x^2 - 32x + 15 = 0$
- $x^2 - 7x + 5 = 0$
- $3x^2 - 12x + 4 = 0$
- $x^2 - 5x - 10 = 0$
- $x^2 - 5x - 24 = 0$

Lesson 5-6**The Quadratic Formula and the Discriminant** (pp. 292-300)

Complete parts a-c for each quadratic equation. 1-15. See Student Handbook Answer Appendix.

- Find the value of the discriminant.
 - Describe the number and type of roots.
 - Find the exact solutions by using the Quadratic Formula.
- $x^2 + 7x + 13 = 0$
 - $6x^2 + 6x - 21 = 0$
 - $5x^2 - 5x + 4 = 0$
 - $9x^2 + 42x + 49 = 0$
 - $4x^2 - 16x + 3 = 0$
 - $2x^2 = 5x + 3$
 - $x^2 + 81 = 18x$
 - $3x^2 - 30x + 75 = 0$
 - $24x^2 + 10x = 43$
 - $7x = 8x^2$
 - $18x^2 = 9x + 45$
 - $4x^2 + 4 = 2x$
 - $x^2 - 6x + 13 = 0$
 - $x^2 - 4x + 4 = 0$
 - $4x^2 + 16x + 15 = 0$
 - $4x^2 + 3x - 2 = 0$
 - $2x^2 + 5x = 9$
 - $x^2 = 8x - 16$
 - $7x^2 = 4x$
 - $2x^2 + 6x + 5 = 0$
 - $9x^2 - 30x + 25 = 0$
 - $3x^2 - 4x + 2 = 0$
 - $3x^2 = 108x$

Solve each equation by using the Quadratic Formula. 16-24. See Student Handbook Answer Appendix.

- $x^2 + 4x + 29 = 0$
- $4x^2 + 3x - 2 = 0$
- $2x^2 + 5x = 9$
- $x^2 = 8x - 16$
- $7x^2 = 4x$
- $2x^2 + 6x + 5 = 0$
- $9x^2 - 30x + 25 = 0$
- $3x^2 - 4x + 2 = 0$
- $x^2 = (x + 6)^2 - 1$
- $y = 2(x - 8)^2 - 5$
- $y = -(x + 1)^2 + 7$
- $y = -9(x - 7)^2 + 3$
- $y = -x^2 + 10x - 3$
- $y = x^2 - 2x + 4$
- $y = -3x^2 + 18x$
- $y = 2x^2 - 8x + 9$
- $y = \frac{1}{3}x^2 + 2x + 7$
- $y = x^2 - 2x + 4$
- $y = -0.5x^2 + 4x - 3$
- $y = -2x^2 - 4x + 1$
- $y = -2x^2 + 6x + 9$
- $y = -2x^2 - 8x - 1$

Lesson 5-7**Transformations with Quadratic Functions** (pp. 305-310)

Write each quadratic function in vertex form. Then identify the vertex, axis of symmetry, and direction of opening. 1-6. See Student Handbook Answer Appendix.

- $y = (x + 6)^2 - 1$
- $y = 2(x - 8)^2 - 5$
- $y = -(x + 1)^2 + 7$
- $y = -9(x - 7)^2 + 3$
- $y = -x^2 + 10x - 3$
- $y = -2x^2 + 16x + 7$

Graph each function. 7-15. See Student Handbook Answer Appendix.

- $y = x^2 - 2x + 4$
- $y = -3x^2 + 18x$
- $y = 2x^2 - 8x + 9$
- $y = \frac{1}{3}x^2 + 2x + 7$
- $y = x^2 + 3x + 6$
- $y = -0.5x^2 + 4x - 3$
- $y = x^2 - 2x + 4$
- $y = -3x^2 + 18x$
- $y = 2x^2 - 8x + 9$
- $y = \frac{1}{3}x^2 + 2x + 7$
- $y = x^2 + 3x + 6$
- $y = -0.5x^2 + 4x - 3$

Lesson 5-8**Quadratic Inequalities** (pp. 312-318)

Graph each inequality. 1-8. See Student Handbook Answer Appendix.

- $y \leq 5x^2 + 3x - 2$
- $y > -3x^2 + 2$
- $y \geq x^2 - 8x$
- $y \leq 3x^2 + 4x - 8$
- $y \leq -5x^2 + 2x - 3$
- $y > 4x^2 + x$
- $y \geq -x^2 - x + 3$
- $y \geq -x^2 - 3$

Solve each inequality by graphing.

- $x^2 - 4 \leq 0$
- $-2 \leq x \leq 2$
- $-x^2 + 6x - 9 \geq 0$
- $x^2 + 4x - 5 < 0$
- $-5 < x < 1$

Solve each inequality algebraically. 12-19. See Student Handbook Answer Appendix.

- $x^2 - 1 < 0$
- $10x^2 - x - 2 \geq 0$
- $-x^2 - 5x - 6 > 0$
- $x^2 - 1 < 0$
- $2x^2 \geq 5x + 12$
- $x^2 + 3x - 4 > 0$
- $x^2 - 2x - 8 \leq 0$
- $2x^2 \geq 5x + 12$
- $x^2 + 3x - 4 > 0$
- $-3x^2 \geq 5$
- $2x - x^2 \leq -15$

956**Extra Practice****957****Extra Practice**