

Name _____

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Additional Exercises 10.1**Form I**

Solving Quadratic Equations by the Square Root Property

Solve the quadratic equation by the square root property. If possible, simplify radicals or rationalize denominators.

1. $x^2 = 49$

1. _____

2. $x^2 = 81$

2. _____

3. $x^2 = 11$

3. _____

4. $x^2 = 20$

4. _____

5. $25x^2 = 64$

5. _____

Solve the quadratic equation by first factoring the perfect square trinomial on the left side. Then apply the square root property. If possible, simplify radicals or rationalize denominators.

6. $x^2 + 4x + 4 = 9$

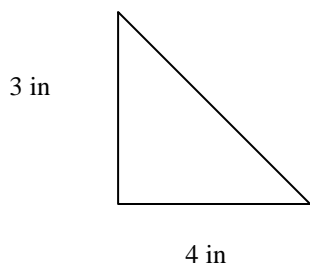
6. _____

7. $x^2 - 6x + 9 = 25$

7. _____

Use the Pythagorean Theorem to find the missing length in the right triangle. Express the answer in radical form, and simplify, if possible.

8.



8. _____

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Find the distance between each pair of points. Express answers in simplified radical form.

9. $(1, 2)$ $(5, 7)$ 9. _____

10. $(3, 4)$ $(-6, 1)$ 10. _____

11. $(2, 8)$ $(-1, 5)$ 11. _____

12. $(3, 4)$ $(-5, 0)$ 12. _____

13. $(8, 4)$ $(-6, 3)$ 13. _____

Solve each problem.

14. The formula $F = 0.02x^2 + 23$ models the percentage of female tenured faculty, F , at State University x years after 1980. According to the formula, in what year will the percentage of female tenured faculty reach 36.52? 14. _____

15. The area of a circle is found by the equation $A = \pi r^2$. If the area A of a certain circle is 25π square centimeters, find its radius r . 15. _____

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Additional Exercises 10.1**Form II**

Solving Quadratic Equations by the Square Root Property

Solve the quadratic equation by the square root property. If possible, simplify radicals or rationalize denominators.

1. $x^2 = 36$

1. _____

2. $2x^2 = 14$

2. _____

3. $7x^2 = 100$

3. _____

4. $(x-3)^2 = 36$

4. _____

5. $(x+5)^2 = 40$

5. _____

Solve the quadratic equation by first factoring the perfect square trinomial on the left side. Then apply the square root property. If possible, simplify radicals or rationalize denominators.

6. $x^2 + 20x + 100 = 19$

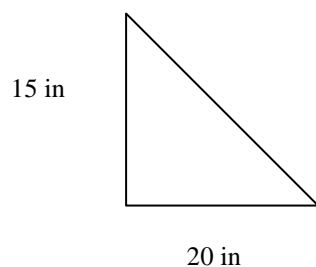
6. _____

7. $x^2 + 10x + 25 = 7$

7. _____

Use the Pythagorean Theorem to find the missing length in the right triangle. Express the answer in radical form, and simplify, if possible.

8.



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Find the distance between each pair of points. Express answers in simplified radical form.

9. $(2, 5)$ $(1, 4)$ 9. _____

10. $(-2, 6)$ $(-1, 3)$ 10. _____

11. $(0, 8)$ $(3, -5)$ 11. _____

12. $(1, 1)$ $(-6, 4)$ 12. _____

13. $(2, 2)$ $(5, 7)$ 13. _____

Solve each problem.

14. Neglecting air resistance, the distance d , in feet, that an object falls in t seconds is given by the equation $d = 16t^2$. If a window washer drops her bucket from the roof of a 256-foot building, how long will it take the bucket to hit the ground? 14. _____

15. A square sheet of paper measures 48 centimeters on each side. What is the length of the diagonal of this paper? 15. _____

Additional Exercises 10.1**Form III**

Solving Quadratic Equations by the Square Root Property

Solve the quadratic equation by the square root property. If possible, simplify radicals or rationalize denominators.

1. $y^2 = 23$

1. _____

2. $2x^2 - 4 = 50$

2. _____

3. $7x^2 = 5$

3. _____

4. $(2m - 1)^2 = 25$

4. _____

5. $(5x + 4)^2 = 10$

5. _____

Solve the quadratic equation by first factoring the perfect square trinomial on the left side. Then apply the square root property. If possible, simplify radicals or rationalize denominators.

6. $x^2 - 6x + 9 = 6$

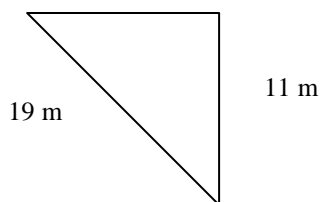
6. _____

7. $x^2 - x + \frac{1}{4} = 2$

7. _____

Use the Pythagorean Theorem to find the missing length in the right triangle. Express the answer in radical form, and simplify, if possible.

8.



8. _____

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Find the distance between each pair of points. Express answers in simplified radical form.

9. $(1, 6)$ $(-3, 2)$

9. _____

10. $(2, 4)$ $(-6, 0)$

10. _____

11. $(3, 5)$ $(-2, -7)$

11. _____

12. $(1, -8)$ $(3, -6)$

12. _____

13. $(-4, 3)$ $(2, 5)$

13. _____

Solve each problem.

14. A ladder that is 10 feet long is 6 feet from the base of a wall. How far up the wall does the ladder reach?

14. _____

15. A machine produces open boxes using square sheets of plastic. The machine cuts equal-sized squares measuring 2 inches on a side from each corner of the sheet, and then shapes the plastic into a open box by turning up the sides. If each box must have a volume of 242 cubic inches, find the length of one side of the open box.

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Additional Exercises 10.2

Form I

Solving Quadratic Equations by Completing the Square

Complete the square for each binomial. Then factor the resulting perfect square trinomial.

1. $x^2 + 10x$ 1. _____

2. $x^2 - 16x$ 2. _____

3. $x^2 + 8x$ 3. _____

4. $x^2 - 4x$ 4. _____

5. $x^2 + 12x$ 5. _____

6. $x^2 - 22x$ 6. _____

7. $x^2 + x$ 7. _____

8. $x^2 - 5x$ 8. _____

9. $x^2 + 18x$ 9. _____

10. $x^2 - 7x$ 10. _____

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Solve each quadratic equation by completing the square.

11. $x^2 + 12x + 27 = 0$

11. _____

12. $2x^2 - 4x - 8 = 0$

12. _____

13. $x^2 + 3x - 9 = 0$

13. _____

14. $x^2 - 12x = -35$

14. _____

15. $x^2 - 2x = 35$

15. _____

16. $x^2 + 6x + 3 = 0$

16. _____

17. $7x^2 - 2x - 4 = 0$

17. _____

18. $x^2 - 5x = 2$

18. _____

19. $x^2 - 4x - 17 = 0$

19. _____

20. $2x^2 - 9x + 9 = 0$

20. _____

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Additional Exercises 10.2**Form II**

Solving Quadratic Equations by Completing the Square

Complete the square for each binomial. Then factor the resulting perfect square trinomial.

1. $x^2 - 8x$ 1. _____

2. $x^2 + 20x$ 2. _____

3. $x^2 - 9x$ 3. _____

4. $x^2 + 3x$ 4. _____

5. $x^2 - 5x$ 5. _____

6. $x^2 + 11x$ 6. _____

7. $x^2 - 18x$ 7. _____

8. $x^2 + 13x$ 8. _____

9. $x^2 - \frac{1}{2}x$ 9. _____

10. $x^2 - x$ 10. _____

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Solve each quadratic equation by completing the square.

11. $x^2 + 4x - 12 = 0$

11. _____

12. $x^2 + 12x + 17 = 0$

12. _____

13. $3x^2 = 7x$

13. _____

14. $x^2 + 4x - 3 = 0$

14. _____

15. $x^2 - 4x - 13 = 0$

15. _____

16. $x^2 + 8x - 4 = 0$

16. _____

17. $x^2 - 10x = 4$

17. _____

18. $x^2 + 8x = 5$

18. _____

19. $x^2 = 3 - 8x$

19. _____

20. $6x^2 = -x + 2$

20. _____

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Additional Exercises 10.2**Form III**

Solving Quadratic Equations by Completing the Square

Complete the square for each binomial. Then factor the resulting perfect square trinomial.

1. $x^2 - 3x$

1. _____

2. $x^2 + 5x$

2. _____

3. $x^2 + 7x$

3. _____

4. $x^2 + 9x$

4. _____

5. $x^2 - 15x$

5. _____

6. $x^2 + \frac{1}{3}x$

6. _____

7. $x^2 - \frac{2}{3}x$

7. _____

8. $x^2 + \frac{4}{7}x$

8. _____

9. $x^2 + \frac{1}{2}x$

9. _____

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10. $x^2 - \frac{1}{4}x$

10. _____

Solve each quadratic equation by completing the square.

11. $x^2 + 2x - 3 = 0$

11. _____

12. $x^2 - 6x = 16$

12. _____

13. $x^2 - 4x = 11$

13. _____

14. $x^2 + 10x = 4$

14. _____

15. $2x^2 + 3x = 17$

15. _____

16. $9x^2 - 12x - 2 = 0$

16. _____

17. $2x^2 = -6x + 5$

17. _____

18. $x^2 + 14x = 15$

18. _____

19. $6x^2 + 11x = 10$

19. _____

20. $7x^2 + 21x = -14$

20. _____

Additional Exercises 10.3
Form I
The Quadratic Formula

Solve the equation using the quadratic formula. Simplify irrational solutions, if possible.

1. $x^2 + 2x - 15 = 0$ 1. _____

2. $x^2 - 9x = -14$ 2. _____

3. $6x^2 + x = 2$ 3. _____

4. $x^2 - 6x + 3 = 0$ 4. _____

5. $x^2 + 2x - 5 = 0$ 5. _____

6. $x^2 - 14x + 30 = 0$ 6. _____

7. $(4x + 6)^2 = 9$ 7. _____

8. $4x^2 - 23x - 6 = 0$ 8. _____

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9. $18x^2 + 39x + 7 = -13$ 9. _____

10. $x^2 - 4x = 7$ 10. _____

11. $x^2 + 3x = 0$ 11. _____

12. The formula $P = 0.68x^2 - 0.044x + 2$ models the approximate population P , in thousands, for a species of fish in a local pond, x years after 1997. During what year will the population reach 26.216 thousand fish?

 12. _____

13. The formula $N = 2x^2 + 4x + 1$ represents the number of households N , in thousands, in a certain city that have a computer x years after 1990. According to the formula, in what year were there 97 thousand households with computers in this city?

 13. _____

14. The hypotenuse of a right triangle measures 5 cm. One leg is 2 cm. shorter than the other leg. Find the measures of each leg and round to the nearest tenth if necessary.

 14. _____

15. An object is thrown upward from the top of a 160-foot building with an initial velocity of 48 feet per second. The height h of the object after t seconds is given by the quadratic equation $h = -16t^2 + 48t + 160$. When will the object hit the ground? Round to the nearest tenth of a second if necessary.

 15. _____

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Additional Exercises 10.3
Form II
The Quadratic Formula

Solve the equation using the quadratic formula. Simplify irrational solutions, if possible.

1. $x^2 + 4x - 12 = 0$

1. _____

2. $2x^2 + 6x + 1 = 0$

2. _____

3. $3x^2 = -12x - 1$

3. _____

4. $x^2 = 9 - 4x$

4. _____

5. $x^2 + 5x + 1 = 0$

5. _____

6. $x^2 - 8x = -1$

6. _____

7. $3x^2 - 8x = -1$

7. _____

8. $x^2 - 2x - 4 = 0$

8. _____

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9. $3x^2 - 9x = -3$ 9. _____

10. $2x^2 + 6x + 3 = 0$ 10. _____

11. $x^2 + 10x + 6 = 0$ 11. _____

12. The formula $P = 0.68x^2 - 0.044x + 2$ models the approximate population P , in thousands, for a species of fish in a local pond, x years after 1997. During what year will the population reach 35.012 thousand fish?

 12. _____

13. The formula $N = 2x^2 + 4x + 1$ represents the number of households N , in thousands, in a certain city that have a computer x years after 1990. According to the formula, in what year were there 241 thousand households with computers in this city?

 13. _____

14. The hypotenuse of a right triangle measures 15 feet long. One leg of the triangle is 5 feet longer than the other leg. Find the perimeter of the triangle.

 14. _____

15. An object is thrown upward from the top of a 120-foot building with an initial velocity of 48 feet per second. The height h of the object after t seconds is given by the quadratic equation $h = -16t^2 + 48t + 120$. When will the object hit the ground? Round to the nearest tenth of a second if necessary.

 15. _____

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Additional Exercises 10.3
Form III
The Quadratic Formula

Solve the quadratic equation by the square root property. If possible, simplify radicals or rationalize denominators.

1. $x^2 + 5x + 6 = 0$ 1. _____

2. $x^2 - 5x = 0$ 2. _____

3. $\frac{2}{3}x^2 - x + \frac{1}{6} = 0$ 3. _____

4. $0.01x^2 + 0.06x - 0.08 = 0$ 4. _____

5. $x^2 - 8x + 14 = 0$ 5. _____

6. $\frac{1}{3}x^2 - \frac{5}{6}x - \frac{1}{2} = 0$ 6. _____

7. $4x^2 + x - 7 = 0$ 7. _____

8. $2x^2 + 12x = -5$ 8. _____

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9. $6x^2 = -12x - 5$ 9. _____

10. $2x^2 + 6x + 1 = 0$ 10. _____

11. $\frac{1}{2}x^2 + \frac{1}{4}x - \frac{1}{2} = 0$ 11. _____

12. The formula $P = 0.68x^2 - 0.044x + 2$ models the approximate population P , in thousands, for a species of fish in a local pond, x years after 1997. During what year will the population reach 45.168 thousand fish? 12. _____

13. The formula $N = 2x^2 + 4x + 1$ represents the number of households N , in thousands, in a certain city that have a computer x years after 1990. According to the formula, in what year were there 449 thousand households with computers in this city? 13. _____

14. If the sides of a square are increased by 3 cm, its new area is 100 cm^2 . What did the sides of the square measure originally? 14. _____

15. An object is thrown upward from the top of a 180-foot building with an initial velocity of 48 feet per second. The height h of the object after t seconds is given by the quadratic equation $h = -16t^2 + 48t + 180$. When will the object hit the ground? Round to the nearest tenth of a second if necessary. 15. _____

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Additional Exercises 10.4

Form I

Imaginary Numbers as Solutions of Quadratic Equations

Express each number in terms of i .

1. $\sqrt{-9}$ 1. _____

2. $\sqrt{-64}$ 2. _____

3. $\sqrt{-900}$ 3. _____

4. $\sqrt{-20}$ 4. _____

5. $\sqrt{-80}$ 5. _____

6. $\sqrt{-300}$ 6. _____

7. $8 + \sqrt{-121}$ 7. _____

8. $5 - \sqrt{-4}$ 8. _____

9. $7 + \sqrt{-64}$ 9. _____

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Solve the quadratic equation using the square root property. Express complex solutions in $a + bi$ form.

10. $(x + 2)^2 = -16$ 10. _____

11. $(x + 5)^2 = -100$ 11. _____

12. $(x - 6)^2 = -64$ 12. _____

13. $(x - 8)^2 = -9$ 13. _____

14. $(x - 4)^2 = -1$ 14. _____

Solve the quadratic equation using the quadratic formula. Express the complex solutions in $a + bi$ form.

15. $x^2 - 8x + 25 = 0$ 15. _____

16. $3x^2 + 30x + 102 = 0$ 16. _____

17. $x^2 + 2x + 10 = 0$ 17. _____

18. $x^2 + 13 = 2x$ 18. _____

19. $x^2 - 4x = -29$ 19. _____

20. $x^2 + 4x = -7$ 20. _____

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Additional Exercises 10.4

Form II

Imaginary Numbers as Solutions of Quadratic Equations

Express each number in terms of i .

1. $\sqrt{-45}$

1. _____

2. $\sqrt{-72}$

2. _____

3. $\sqrt{-44}$

3. _____

4. $\sqrt{-120}$

4. _____

5. $\sqrt{-600}$

5. _____

6. $\sqrt{-540}$

6. _____

7. $5 + \sqrt{-8}$

7. _____

8. $12 - \sqrt{-6}$

8. _____

9. $11 - \sqrt{-32}$

9. _____

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Solve the quadratic equation using the square root property. Express complex solutions in $a + bi$ form.

10. $(x - 15)^2 = -20$ 10. _____

11. $(x - 10)^2 = -1$ 11. _____

12. $(y + 3)^2 = -13$ 12. _____

13. $(x + 12)^2 = -32$ 13. _____

14. $(x - 11)^2 = -50$ 14. _____

Solve the quadratic equation using the quadratic formula. Express the complex solutions in $a + bi$ form.

15. $x^2 + 49 = 0$ 15. _____

16. $x^2 - 2x = -2$ 16. _____

17. $x^2 - 4x = -5$ 17. _____

18. $3r^2 = r - 4$ 18. _____

19. $4x^2 - 2x = -3$ 19. _____

20. $y^2 - 4y = -102$ 20. _____

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Additional Exercises 10.4

Form III

Imaginary Numbers as Solutions of Quadratic Equations

Express each number in terms of i .

1. $\sqrt{-98}$ 1. _____

2. $\sqrt{-150}$ 2. _____

3. $\sqrt{-280}$ 3. _____

4. $\sqrt{-132}$ 4. _____

5. $\sqrt{-243}$ 5. _____

6. $\sqrt{-270}$ 6. _____

7. $14 + \sqrt{-28}$ 7. _____

8. $19 - \sqrt{-50}$ 8. _____

9. $4 + \sqrt{-147}$ 9. _____

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Solve the quadratic equation using the square root property. Express complex solutions in $a + bi$ form.

10. $(5x + 3)^2 = -6$ 10. _____

11. $(2x + 1)^2 = -7$ 11. _____

12. $(3x - 2)^2 = -12$ 12. _____

13. $(x + 5)^2 = -11$ 13. _____

14. $(y + 12)^2 = -384$ 14. _____

Solve the quadratic equation using the quadratic formula. Express the complex solutions in $a + bi$ form.

15. $3x^2 - 4x = -10$ 15. _____

16. $x^2 - 10x = -27$ 16. _____

17. $x^2 + x + 8 = 0$ 17. _____

18. $-2x^2 + 7x - 9 = 0$ 18. _____

19. $\frac{x^2}{2} - \frac{2x}{3} = -1$ 19. _____

20. $2x^2 + 2x + 3 = 0$ 20. _____

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Additional Exercises 10.5
Form I
Graphs of Quadratic Equations

Determine if the parabola whose equation is given opens upward or downward.

1. $y = x^2 + 2x - 6$ 1. _____

2. $y = -4x^2 + 2x - 2$ 2. _____

Find the two x -intercepts for the parabola whose equation is given. Round irrational answers to the nearest tenth, if necessary.

3. $y = x^2 + 4x - 3$ 3. _____

4. $y = -x^2 + 17x - 72$ 4. _____

5. $y = 2x^2 + 6x - 56$ 5. _____

Find the y -intercept for the parabola whose equation is given.

6. $y = 2x^2 - x$ 6. _____

7. $y = -3x^2 - 4x + 1$ 7. _____

8. $y = x^2 - 7x - 8$ 8. _____

Find the vertex for the parabola whose equation is given.

9. $y = x^2 + 7$ 9. _____

10. $y = x^2 - 8x - 4$ 10. _____

11. $y = -3x^2 + 6x + 6$ 11. _____

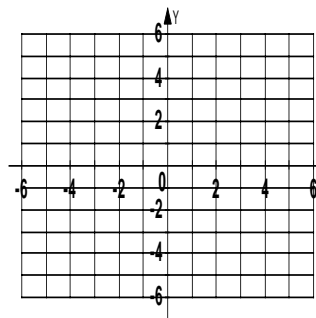
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Graph the parabola whose equation is given.

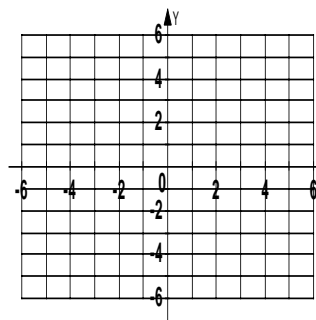
12. $y = x^2 - 6x + 8$

12.



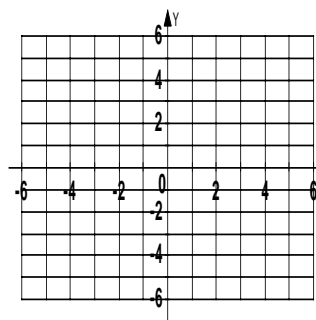
13. $y = -x^2 + 2x + 3$

13.



14. $y = x^2 + 1$

14.



Solve.

15. The cost in millions of dollars for a company to manufacture x thousand automobiles is given by the function $C(x) = 4x^2 - 40x + 225$. Find the number of automobiles that must be produced to minimize the cost.

15. _____

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Additional Exercises 10.5
Form II
Graphs of Quadratic Equations

Determine if the parabola whose equation is given opens upward or downward.

1. $y = -3x^2 + 5$ 1. _____

2. $y = 2x^2 - x + 7$ 2. _____

Find the x -intercept for the parabola whose equation is given. Round irrational answer to the nearest tenth, if necessary.

3. $y = x^2 + 18x$ 3. _____

4. $y = 2x^2 + 3x - 27$ 4. _____

5. $y = x^2 - 2x + 4$ 5. _____

Find the y -intercept for the parabola whose equation is given.

6. $y = 2x^2 - 9x + 6$ 6. _____

7. $y = 4x^2 + \frac{1}{2}x - \frac{3}{4}$ 7. _____

8. $y = -5x^2 - 9$ 8. _____

Find the vertex for the parabola whose equation is given.

9. $y = -3x^2 + x$ 9. _____

10. $y = -x^2 + 12$ 10. _____

11. $y = -x^2 - x - 1$ 11. _____

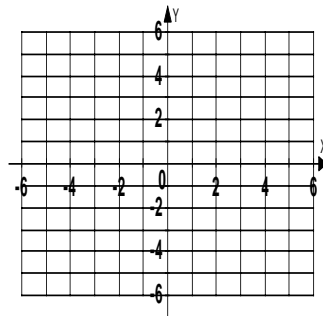
Name _____

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Graph the parabola whose equation is given.

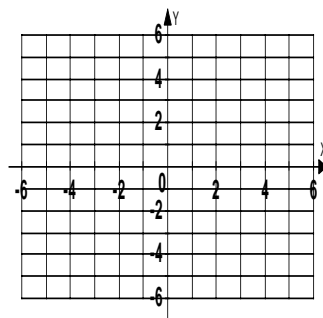
12. $y = x^2 - 8x + 15$

12.



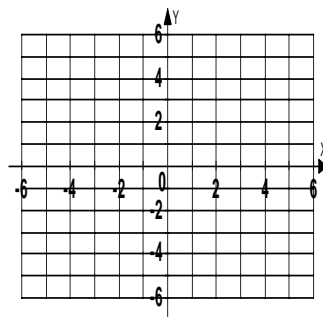
13. $y = -6x^2 - 3x + 1$

13.



14. $y = \frac{1}{2}x^2$

14.



Solve.

15. A projectile is fired from a cliff 200 feet above the water. The height h of the projectile above the water is given by $h = \frac{-32x^2}{(240)^2} + x + 200$, where x is the horizontal distance of the projectile from the base of the cliff. Find the maximum height of the projectile.

15. _____

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Additional Exercises 10.5
Form III
Graphs of Quadratic Equations

Determine if the parabola whose equation is given opens upward or downward.

1. $y = \frac{3}{4}x^2 - \frac{5}{7}x + \frac{1}{2}$ 1. _____

2. $y = -0.7x^2 + 0.9x - 1.4$ 2. _____

Find the x - intercept for the parabola whose equation is given. Round irrational answer to the nearest tenth, if necessary.

3. $y = x^2 - 2$ 3. _____

4. $y = -x^2 - 4x + 7$ 4. _____

5. $y = x^2 - 5x + 1$ 5. _____

Find the y - intercept for the parabola whose equation is given.

6. $y = 0.07x^2 - 0.9x + 0.15$ 6. _____

7. $y = \frac{5}{8}x^2 - \frac{1}{4}x + \frac{3}{7}$ 7. _____

8. $y = -19x^2 + 15x - 24$ 8. _____

Find the vertex for the parabola whose equation is given.

9. $y = x^2 - 3x - 4$ 9. _____

10. $y = -x^2 + 7x + 7$ 10. _____

11. $y = x^2 + 2x$ 11. _____

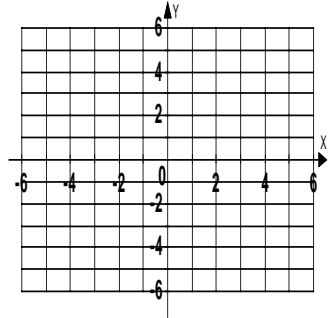
Name _____

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Graph the parabola whose equation is given.

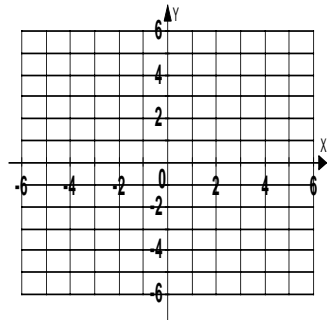
12. $y = 5x^2 - 10x + 4$

12.



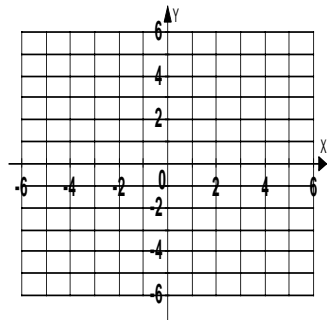
13. $y = x^2 - 4x$

13.



14. $y = -x^2 - 3x$

14.



Solve.

15. The profit that a vendor makes per day by selling x pretzels is given by the function $P(x) = -0.002x^2 + 1.6x - 350$. Find the number of pretzels that must be sold to maximize profit.

15. _____

Additional Exercises 10.6
Form I
Introduction to Functions

Decide whether the relation defines a function.

1. $\{(-3, 3), (3, -9), (4, -4), (9, 3), (11, -7)\}$ 1. _____

2. $\{(-4, -7), (-1, 2), (3, -5), (3, 9)\}$ 2. _____

3. $\{(-4, -2), (-1, -8), (1, 5), (6, -6)\}$ 3. _____

4. $\{(-6, -9), (-6, -1), (2, 6), (3, -8), (8, 9)\}$ 4. _____

Find the domain and range.

5. $\{(-6, 6), (4, -9), (10, 5)\}$ 5. _____

6. $\{(1, -6), (-1, -7), (12, -5)\}$ 6. _____

7. $\{(3, -1), (-1, -6), (2, -3)\}$ 7. _____

8. $\{(-1, -2), (9, 4), (-3, 7)\}$ 8. _____

Evaluate the function at the given value.

9. Find $f(0)$ when $f(x) = 4x - 6$ 9. _____

10. Find $f(3)$ when $f(x) = x^2 - 5x + 4$ 10. _____

11. Find $h(9)$ when $h(x) = |x - 8|$ 11. _____

12. Find $f(3)$ when $f(x) = x^2 - 5x$ 12. _____

Name _____

Date _____

13. Find $f(4)$ when $f(t) = \sqrt{t+117} - 9$

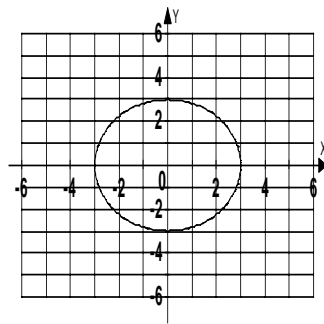
13. _____

14. Find $f(-5)$ when $f(r) = \frac{4r}{|4r|}$

14. _____

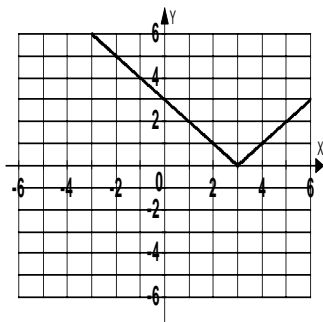
Use the vertical line test to determine if the graph is a function of x in y .

15.



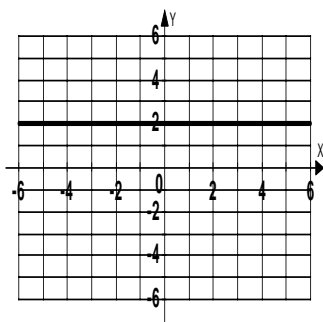
15. _____

16.



16. _____

17.



17. _____

Name _____

Date _____

Solve.

18. The monthly cost of a certain long distance service is given by the linear function $C(t) = 0.07t + 3.95$ where $C(t)$ is in dollars and t is the amount of time in minutes called in a month. Find the cost of calling long distance for 180 minutes in a month. 18. _____
19. A rocket is stopped 27 feet from a satellite when it begins accelerating away from the satellite at a constant rate of 8 feet per second. The distance between the rocket and the satellite is given by the polynomial $P(t) = 4t^2 + 27$. Find the distance between the rocket and the satellite 11 seconds after the rocket started moving. 19. _____
20. The function $W(g) = 0.54g^2 - 0.06g + 7.2$ models the average weight in ounces for a mouse who is fed g grams per day of a special food. Use the function to find and interpret $W(25)$. Round the answer to the nearest tenth. 20. _____

Additional Exercises 10.6**Form II**

Introduction to Functions

Decide whether the relation defines a function.

1. $\{(2, 1), (3, 7), (8, 5), (6, -8), (0, -5)\}$ 1. _____

2. $\{(1, 2), (1, 3), (1, 4), (1, 5)\}$ 2. _____

3. $\{(-3, 5), (6, 5), (2, 5), (1, 5)\}$ 3. _____

4. $\{(3, 4), (5, -1), (6, -7), (0, -2), (-6, 5)\}$ 4. _____

Find the domain and range.

5. $\{(1, 5), (0, 6), (-5, -4)\}$ 5. _____

6. $\{(-5, 3), (2, -8), (1, 0)\}$ 6. _____

7. $\{(1, 1), (2, 2), (3, 3)\}$ 7. _____

8. $\{(8, 5), (-6, 5), (0, 5)\}$ 8. _____

Evaluate the function at the given value.

9. Find $f(6)$ when $f(x) = 4x - 6$ 9. _____

10. Find $f(-1)$ when $f(x) = x^2 - 5x + 4$ 10. _____

11. Find $h(4)$ when $h(x) = |x - 8|$ 11. _____

12. Find $f(0)$ when $f(x) = x^2 - 5x$ 12. _____

Name _____

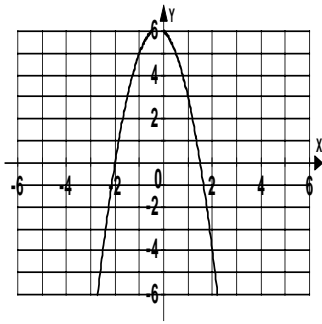
Date _____

13. Find $f(-17)$ when $f(t) = \sqrt{t+117} - 9$ 13. _____

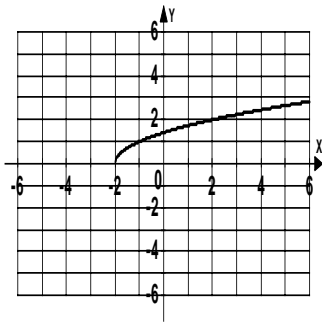
14. Find $f(1)$ when $f(r) = \frac{4r}{|4r|}$ 14. _____

Use the vertical line test to determine if the graph is a function of x in y .

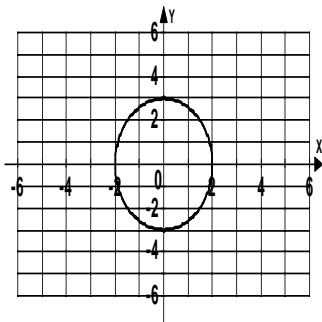
15. _____



16. _____



17. _____



Name _____

Date _____

Solve.

18. The monthly cost of a certain long distance service is given by the linear function $C(t) = 0.07t + 3.95$ where $C(t)$ is in dollars and t is the amount of time in minutes called in a month. Find the cost of calling long distance for 210 minutes in a month. 18. _____
19. A rocket is stopped 27 feet from a satellite when it begins accelerating away from the satellite at a constant rate of 8 feet per second. The distance between the rocket and the satellite is given by the polynomial $P(t) = 4t^2 + 27$. Find the distance between the rocket and the satellite 14 seconds after the rocket started moving. 19. _____
20. The function $W(g) = 0.54g^2 - 0.06g + 7.2$ models the average weight in ounces for a mouse who is fed g grams per day of a special food. Use the function to find and interpret $W(18)$. Round the answer to the nearest tenth. 20. _____

Additional Exercises 10.6**Form III**

Introduction to Functions

Decide whether the relation defines a function.

1. $\{(1, 4), (2, 0), (-3, 5), (5, 8), (6, -7)\}$ 1. _____

2. $\{(3, 3), (4, 4), (5, 5), (6, 6)\}$ 2. _____

3. $\{(-1, 8), (-1, 4), (-1, 6), (-1, -8)\}$ 3. _____

4. $\{(6, 4), (9, 4), (-8, 4), (-2, 4)\}$ 4. _____

Find the domain and range.

5. $\{(8, 1), (-3, 6), (5, 0)\}$ 5. _____

6. $\{(-4, 2), (7, -1), (8, -9)\}$ 6. _____

7. $\{(5, 5), (-2, -2), (6, 6)\}$ 7. _____

8. $\{(9, 3), (5, -4), (0, 1)\}$ 8. _____

Evaluate the function at the given value.

9. Find $f(-5)$ when $f(x) = 4x - 6$ 9. _____

10. Find $f(-4)$ when $f(x) = x^2 - 5x + 4$ 10. _____

11. Find $h(-2)$ when $h(x) = |x - 8|$ 11. _____

12. Find $f(-2)$ when $f(x) = x^2 - 5x$ 12. _____

Name _____

Date _____

13. Find $f(27)$ when $f(t) = \sqrt{t+117} - 9$

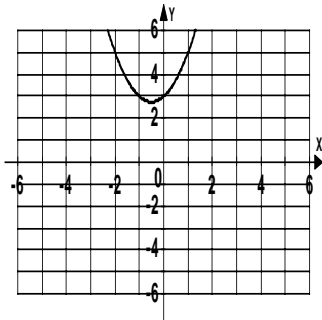
13. _____

14. Find $f(6)$ when $f(r) = \frac{4r}{|4r|}$

14. _____

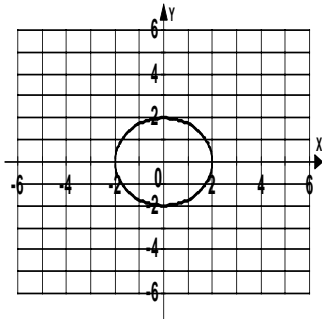
Use the vertical line test to determine if the graph is a function of x in y .

15.



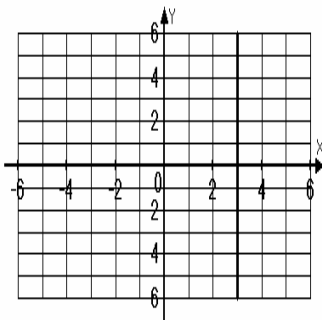
15. _____

16.



16. _____

17.



17. _____

Name _____

Date _____

Solve.

18. The monthly cost of a certain long distance service is given by the linear function $C(t) = 0.07t + 3.95$ where $C(t)$ is in dollars and t is the amount of time in minutes called in a month. Find the cost of calling long distance for 345 minutes in a month. 18. _____

19. A rocket is stopped 27 feet from a satellite when it begins accelerating away from the satellite at a constant rate of 8 feet per second. The distance between the rocket and the satellite is given by the polynomial $P(t) = 4t^2 + 27$. Find the distance between the rocket and the satellite 18 seconds after the rocket started moving. 19. _____

20. The function $W(g) = 0.54g^2 - 0.06g + 7.2$ models the average weight in ounces for a mouse who is fed g grams per day of a special food. Use the function to find and interpret $W(20)$. Round the answer to the nearest tenth. 20. _____