

Get Ready!

Lesson 4-2

Graphing Quadratic Functions

Graph each function.

1. $f(x) = x^2 - 8x + 7$

2. $f(x) = -\frac{1}{2}x^2 - 4x - 4$

3. $f(x) = x^2 + 4x + 4$

Lesson 4-3

Writing Equations of Parabolas

Write in standard form the equation of the parabola passing through the given points.

4. $(-1, -6), (-3, -4), (2, 6)$

5. $(3, 4), (-2, 9), (2, 1)$

6. $(-5, -8), (4, -8), (-3, 6)$

Lesson 4-5

Solving Quadratic Equations by Graphing

Solve each equation by graphing. Round to the nearest hundredth.

7. $1 = 4x^2 + 3x$

8. $\frac{1}{2}x^2 + x - 14 = 0$

9. $5x^2 + 30x = 12$

Lesson 4-5

Solving Quadratic Equations by Factoring

Solve each equation by factoring.

10. $x^2 - x - 20 = 0$

11. $x^2 + 6x - 27 = 0$

12. $3x^2 - 9x + 6 = 0$

Lesson 4-7

Finding the Number and Type of Solutions

Evaluate the discriminant of each equation. Tell how many solutions each equation has and whether the solutions are real or imaginary.

13. $x^2 - 12x + 30 = 0$

14. $-4x^2 + 20x - 25 = 0$

15. $2x^2 = 8x - 8$



Looking Ahead Vocabulary

16. A *turning point* is a place where a graph changes direction. Suppose you start hiking north on a winding trail, and the trail makes a turn and heads south, and then north again. If you make a total of 3 of these 180 degree turns, in which direction will you be hiking after the last turn?
17. A *relative maximum* is the greatest value in a region. The highest point in Maine is Mt. Katahdin at 5267 ft. How might that compare to the highest point in the United States? What might the relative maximum of a graph be?
18. A *contraction* is a shortened form of a word or phrase. The expanded form of the contraction "don't" is "do not." You can *expand* a math phrase by multiplying it out. For example, $(x - 2)^2 = (x - 2)(x - 2) = x^2 - 4x + 4$. Expand $(2x + 1)^2$.