

PREVIEW

What's the chapter about?

Chapter 10 is about **conic sections**. The four conic sections are parabolas, circles, ellipses, and hyperbolas. In Chapter 10 you'll learn

- how to use the distance and midpoint formulas.
- how to graph and write equations of conics, and how to classify conics.
- how to solve systems of quadratic equations.

KEY VOCABULARY

► Review

- parabola, p. 249
- hyperbola, p. 540

► New

- distance formula, p. 589

- midpoint formula, p. 590

- circle, p. 601

- ellipse, p. 609

- hyperbola, p. 615

- conic sections, p. 623

- general second-degree equation, p. 626

- discriminant, p. 626

PREPARE

Are you ready for the chapter?

SKILL REVIEW Do these exercises to review key skills that you'll apply in this chapter. See the given **reference page** if there is something you don't understand.

Write an equation of the line that passes through the given point and has the given slope. (Review Example 2, p. 92)

1. $(0, 4)$, $m = 2$

2. $(2, -2)$, $m = \frac{1}{3}$

3. $(-4, 1)$, $m = -\frac{3}{4}$

Solve the system using any algebraic method. (Review Examples 1–3, pp. 148–150)

4. $x + 2y = 8$
 $3x - y = 3$

5. $2x + y = 3$
 $3x + y = 2$

6. $4x - y = 7$
 $5x - 2y = 2$

Graph the function. Label the vertex and axis of symmetry. (Review Examples 1–3, pp. 250 and 251)

7. $y = x^2 + 4$

8. $y = -3x^2$

9. $y = 2(x - 3)^2 - 1$

Solve the equation by completing the square. (Review Examples 2 and 3, p. 283)

10. $x^2 + 8x + 14 = 0$

11. $5x^2 + 15x = -25$

12. $x^2 - 2x = -8x + 14$

STUDENT HELP

► Study Tip

"Student Help" boxes throughout the chapter give you study tips and tell you where to look for extra help in this book and on the Internet.

STUDY STRATEGY

Here's a study strategy!

Dictionary of Graphs

Make a dictionary of graphs to use as a reference tool. Draw and label an example of each conic. Note the important characteristics of the conic, and write the conic's equation. Expand your dictionary to include all the types of graphs you have learned and continue to learn in this course.