

PREVIEW

What's the chapter about?

Chapter 6 is about **polynomials, polynomial equations, and polynomial functions**. In Chapter 6 you'll learn

- how to perform operations on polynomials and solve polynomial equations.
- how to evaluate, graph, and find zeros of polynomial functions.

KEY VOCABULARY

► Review

- power, p. 11
- x-intercept, p. 84
- zeros of a function, p. 259

► New

- polynomial function, p. 329

- end behavior, p. 331
- polynomial long division, p. 352
- synthetic division, p. 353
- rational zero theorem, p. 359

- fundamental theorem of algebra, p. 366
- local maximum, p. 374
- local minimum, p. 374
- finite differences, p. 380

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.

Simplify the expression. (Review Example 5, p. 13)

- $4x^2 - 2x + x - x^2$
- $2(8x + 5) - 19x$
- $-x^3 - 5x^4 - 3x^3 + 7x^2$

Graph the quadratic function. (Review Examples 1–3, pp. 250 and 251)

- $y = -3(x - 2)^2$
- $y = (x + 1)(x - 5)$
- $y = 2(x + 6)(x + 4)$

Write the quadratic function in standard form. (Review Example 4, p. 251)

- $y = (x - 1)^2 - 7$
- $y = 2(x + 4)^2$
- $y = -(x - 2)(x + 8)$

Solve the equation. (Review Example 5, p. 258)

- $x^2 + 6x - 27 = 0$
- $x^2 + 20x + 100 = 0$
- $2x^2 + 5x - 12 = 0$

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!

Making a Flow Chart

A flow chart is a diagram that shows the possible paths and steps you can follow to solve a problem.

After you complete the chapter, make a flow chart that shows how to find all the zeros of a polynomial function. Include techniques and theorems you learned in Chapter 6 which you can use with various types of polynomial functions.