


10.7 EXERCISES

HOMWORK KEY

 = **WORKED-OUT SOLUTIONS**
on p. WS1 for Exs. 9 and 47

 = **TAKS PRACTICE AND REASONING**
Exs. 18, 19, 40, 41, 47, 51, and 52

SKILL PRACTICE


- VOCABULARY** Write the quadratic formula and circle the expression that represents the discriminant.
- WRITING** Explain how the discriminant of $ax^2 + bx + c = 0$ is related to the graph of $y = ax^2 + bx + c$.

EXAMPLES 1 and 2

on pp. 678–679
for Exs. 3–21

USING THE DISCRIMINANT Tell whether the equation has *two solutions, one solution, or no solution*.

- | | | |
|------------------------------|--------------------------------|------------------------------|
| 3. $x^2 + x + 1 = 0$ | 4. $2x^2 - 5x - 6 = 0$ | 5. $-2x^2 + 8x - 4 = 0$ |
| 6. $3m^2 - 6m + 7 = 0$ | 7. $9v^2 - 6v + 1 = 0$ | 8. $-3q^2 + 8 = 0$ |
| 9. $25p^2 - 16p = 0$ | 10. $2h^2 + 3 = 4h$ | 11. $10 = x^2 - 5x$ |
| 12. $\frac{1}{4}z^2 + 2 = z$ | 13. $-3g^2 - 4g = \frac{4}{3}$ | 14. $8r^2 + 10r - 1 = 4r$ |
| 15. $3n^2 + 3 = 10n - 3n^2$ | 16. $8x^2 + 9 = 4x^2 - 4x + 8$ | 17. $w^2 - 7w + 29 = 4 - 7w$ |

18.  **TAKS REASONING** What is the value of the discriminant of the equation $5x^2 - 7x - 2 = 0$?

- (A) -9 (B) 9 (C) 59 (D) 89

19.  **TAKS REASONING** How many solutions does $-x^2 + 4x = 8$ have?

- (A) None (B) One (C) Two (D) Three

ERROR ANALYSIS Describe and correct the error in finding the number of solutions of the equation.

20. $4x^2 + 12x + 9 = 0$

$$\begin{aligned} b^2 - 4ac &= 12^2 - 4(4)(9) \\ &= 144 - 144 \\ &= 0 \end{aligned}$$

The equation has two solutions.

21. $3x^2 - 7x - 4 = -9$

$$\begin{aligned} b^2 - 4ac &= (-7)^2 - 4(3)(-4) \\ &= 49 - (-48) \\ &= 97 \end{aligned}$$

The equation has two solutions.

EXAMPLE 3

on p. 679
for Exs. 22–30

FINDING THE NUMBER OF x-INTERCEPTS Find the number of *x*-intercepts of the graph of the function.

- | | | |
|---------------------------|-----------------------------------|------------------------------------|
| 22. $y = x^2 - 2x - 4$ | 23. $y = 2x^2 - x - 1$ | 24. $y = 4x^2 + 4x + 1$ |
| 25. $y = 2x^2 - 5x + 5$ | 26. $y = x^2 - 6x + 9$ | 27. $y = 6x^2 + x + 2$ |
| 28. $y = -13x^2 + 2x + 6$ | 29. $y = \frac{1}{4}x^2 - 3x + 9$ | 30. $y = \frac{2}{3}x^2 - 5x + 12$ |

REASONING Give a value of *c* for which the equation has (a) two solutions, (b) one solution, and (c) no solution.

31. $x^2 - 2x + c = 0$ 32. $x^2 - 8x + c = 0$ 33. $4x^2 + 12x + c = 0$