Solving Equations by Taking Square Roots LESSON 22-1 Practice and Problem Solving: A/B

Solve. If the equation has no solution, give that as your answer.

1. $x^2 - 25 = 0$ 2. $x^2 + 25 = 0$ 3. $6x^2 - 6 = 0$ 5. $-2x^2 - 1 = 0$ 4. $-3x^2 + 27 = 0$ 6. $4x^2 - 100 = -100$ 7. $x^2 - 121 = 0$ 8. $x^2 - 49 = 0$ 9. $x^2 - 16 = 20$ 10. $(x+5)^2 - 6 = 43$ 11. $(x-1)^2 - 19 = 81$ 12. $(x - 14)^2 + 13 = 14$ 14. $(x-1)^2 + 15 = 14$ 13. $2(x-3)^2 + 1 = 73$ 15. $-2(x+1)^2 - 5 = -55$ Solve. Express square roots in simplest form. 16. $2(x+1)^2 - 1 = 9$ 17. $2(x-3)^2 + 7 = 19$ 18. $5(x-7)^2 + 10 = 25$

Solve.

- 19. An auditorium has a floor area of 20,000 square feet. The length of the auditorium is twice its width. Find the dimensions of the room.
- 20. A ball is dropped from a height of 64 feet. Its height, in feet, can be modeled by the function $h(t) = -16t^2 + 64$, where t is the time in seconds since the ball was dropped. After how many seconds will the ball hit the ground?
- 21. A plot of land is in the shape of a square. The shaded square inside is covered with gravel. The rest of the square plot is covered in grass. Its area is 1400 square feet. How long are the sides of the square?



5.
$$x = -5$$
, $x = 5$, $x = 0$
6. $x = 0$, $x = -2$
7. $t = \frac{9}{4}$ s
8. A, C, D

Practice and Problem Solving: Modified

1. 2*x*; 5; negative;
$$(2x-5)^2$$

2. 3*x*; 2; positive; $(3x + 2)^2$
3. 5*x*; 3; negative; $(5x - 3)^2$
4. 6*x*; 2; positive; $(6x + 2)^2$
5. 7*x*; 4; $(7x - 4)(7x + 4)$
6. 6; 5*x*; $(6 - 5x)(6 + 5x)$
7. $(7x - 1)$; $(7x - 1)$; $-\frac{1}{7}$; $\frac{1}{7}$
8. $(6x - 11)$; $(6x + 11)$; $\frac{11}{6}$; $-\frac{11}{6}$

Reading Strategies

1.
$$x = \frac{3}{2}, -\frac{3}{2}$$

2. $x = \frac{1}{3}$

Success for English Learners

1.
$$x = -\frac{3}{2}, \frac{3}{2}$$

2. $x = -\frac{7}{5}$

MODULE 21 Challenge

1.
$$(a - b)(a^{2} + ab + b^{2})$$

2. $(a + b)(a^{2} - ab + b^{2})$
3. $a^{4} - b^{4} = (a^{2})^{2} - (b^{2})^{2} = (a^{2} + b^{2})(a^{2} - b^{2})(a^{2} + b^{2})(a - b)(a + b)$

- 4. a. If two polynomials are equal, their corresponding coefficients are equal. The coefficients of a^2 , ab, and b^2 are equal.
 - b. If t = 0 and u = 0, then r and s are given by undefined expressions. Thus, there are no numbers r, s, t, and u for which $a^2 + b^2$ can be factored as (ra + sb) (ta + bu).

MODULE 22 Using Square Roots to Solve Quadratic Equations

LESSON 22-1

Practice and Problem Solving: A/B

1. x = -5 or x = 52. no solution 3. x = -1 or x = 14. x = -3 or x = 35. no solution 6. *x* = 0 7. x = 11 or x = -118. x = 7 or x = -79. *x* = 6 or *x* = −6 10. x = -12 or x = 211. x = 11 or x = -912. x = 15 or x = 1313. x = -3 or x = 914. no solution 15. x = -6 or x = 416. $x = -1 \pm \sqrt{5}$ 17. $x = 3 \pm \sqrt{6}$ 18. $x = 7 \pm \sqrt{3}$ 19. length = 200 ft and width = 100 ft 20.2 s 21. 40 ft

Practice and Problem Solving: C

- .

1. Solve
$$ax^2 + b = c$$
 for x .
 $ax^2 + b = c$
 $ax^2 = c - b$
 $x^2 = \frac{c - b}{a}$
 $x = \pm \sqrt{\frac{c - b}{a}}$
Now examine $\frac{c - b}{a}$, the expression
inside the square root symbol.
If $\frac{c - b}{a}$ is negative, that is $c - b$ and a

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