

11.3 EXERCISES

HOMEWORK KEY

- = WORKED-OUT SOLUTIONS on p. WS1 for Exs. 11 and 37
- ▶ = TAKS PRACTICE AND REASONING Exs. 21, 40, and 42

SKILL PRACTICE

1. **VOCABULARY** Copy and complete: To find the solution of $\sqrt{12 - x} = x$, you square both sides of the equation and solve. The solutions of $(\sqrt{12 - x})^2 = x^2$ are -4 and 3 , but -4 is a(n) ? of $\sqrt{12 - x} = x$.

2. **WRITING** Is $x + x\sqrt{2} = 4$ a radical equation? *Explain* why or why not.

EXAMPLES 1, 2, and 3

on pp. 729–730 for Exs. 3–21, 28

SOLVING EQUATIONS Solve the equation. Check for extraneous solutions.

3. $3\sqrt{x} - 6 = 0$

4. $2\sqrt{x} - 9 = 0$

5. $\sqrt{3x} + 4 = 16$

6. $\sqrt{5x} + 5 = 0$

7. $\sqrt{x+7} + 5 = 11$

8. $\sqrt{x-8} - 4 = -2$

9. $2\sqrt{x-4} - 2 = 2$

10. $3\sqrt{x-1} - 5 = 5$

11. $\sqrt{6-2x} + 12 = 21$

12. $5\sqrt{x-3} + 4 = 14$

13. $2\sqrt{x-11} - 8 = 4$

14. $\sqrt{3x-2} = \sqrt{x}$

15. $\sqrt{7-2x} = \sqrt{9-x}$

16. $\sqrt{3x+8} = \sqrt{x+4}$

17. $\sqrt{9x-30} = \sqrt{4x+5}$

18. $\sqrt{21-x} - \sqrt{1-x} = 0$

19. $\sqrt{x-12} - \sqrt{x-8} = 0$

20. $\sqrt{\frac{1}{2}x-2} - \sqrt{x-8} = 0$

21. **TAKS REASONING** Which is the solution of the equation $10\sqrt{x+3} + 3 = 18$?

(A) $-\frac{3}{2}$

(B) $-\frac{3}{4}$

(C) $\frac{3}{4}$

(D) $\frac{3}{2}$

EXAMPLE 4

on p. 731 for Exs. 22–27, 29

SOLVING EQUATIONS Solve the equation. Check for extraneous solutions.

22. $x = \sqrt{42-x}$

23. $\sqrt{4-3x} = x$

24. $\sqrt{11x-24} = x$

25. $\sqrt{14x-3} = 4x$

26. $2x = \sqrt{1-3x}$

27. $\sqrt{2-x} = x+4$

ERROR ANALYSIS Describe and correct the error in solving the equation.

28.

$$\sqrt{3x} + 9 = 0$$

$$\sqrt{3x} = -9$$

$$3x = 81$$

$$x = 27$$



29.

$$x = \sqrt{18-7x}$$

$$x^2 = 18-7x$$

$$x^2 + 7x - 18 = 0$$

$$(x-2)(x+9) = 0$$

$$x-2 = 0 \text{ or } x+9 = 0$$

$$x = 2 \text{ or } x = -9$$



30. **GEOMETRY** The formula for the slant height s (in inches) of a cone is $s = \sqrt{h^2 + r^2}$ where h is the height of the cone (in inches) and r is the radius of its base (in inches), as shown. Find the height of the cone if you know the slant height is 4 inches and the radius is 2 inches.

