

LESSON
8-8**Practice B****Solving Radical Equations and Inequalities****Solve each equation.**

1. $\sqrt{x+6} = 7$

2. $\sqrt{5x} = 10$

3. $\sqrt{2x+5} = \sqrt{3x-1}$

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

5. $\sqrt[3]{x-6} = \sqrt[3]{3x+24}$

6. $3\sqrt[3]{x} = \sqrt[3]{7x+5}$

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

8. $(x+4)^{\frac{1}{2}} = 6$

9. $4(x-3)^{\frac{1}{2}} = 8$

10. $4(x-12)^{\frac{1}{3}} = -16$

Solve each inequality.

11. $\sqrt{3x+6} \leq 3$

12. $\sqrt{x-4} + 3 > 9$

13. $\sqrt{x+7} \geq \sqrt{2x-1}$

14. $\sqrt{2x-7} > 9$

Solve.

15. A biologist is studying two species of animals in a habitat. The population, p_1 , of one of the species is growing according to $p_1 = 500t^{\frac{3}{2}}$ and the population, p_2 , of the other species is growing according to $p_2 = 100t^2$ where time, t , is measured in years. After how many years will the populations of the two species be equal?
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- _____

Practice B

- $x = 43$
- $x = 20$
- $x = 6$
- $x = \frac{1}{2}$
- $x = -15$
- $x = \frac{1}{4}$
- No solutions, since both -1 and -7 are extraneous
- $x = 32$
- $x = 7$
- $x = -52$
- $-2 \leq x \leq 1$
- $x > 40$
- $\frac{1}{2} \leq x \leq 8$
- $x > 44$
- 25 years

Practice C

- $x = 31$
- $x = 47$
- $x = 7$
- $x = 9$
- $x = -2$ and $x = 1$
- $x = 5$
- $x = \frac{5}{2}$
- $x = 9$; $x = -2$ is an extraneous solution.
- $-\frac{5}{4} \leq x \leq 1$
- $x \geq 5$
- $7 \leq x \leq 16$
- $x > -21$
- $x > 4$
- $-2 \leq x \leq 123$
- $v = \frac{\sqrt{3}}{2}c$

Reteach

- $2x + 11 = 27$
 $2x = 16$; $x = 8$
 $4\sqrt[3]{2(8) + 11} = 12$
 $4\sqrt[3]{36} = 12$ ✓
- $\sqrt{x - 3} = 4$
 $x - 3 = 16$
 $x = 19$
 $5 + \sqrt{19 - 3} = 5$
 $5 + \sqrt{16} = 5 + 4$
 $= 9$ ✓

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

$$x + 4 = 25$$

$$x = 21$$

$$2\sqrt{21 + 4} =$$

$$2\sqrt{25} = 2 \cdot 5$$

$$= 10$$
 ✓

$$4. 5x + 6 = 81$$

$$5x = 75$$

$$x = 15$$

$$5. \left[(6x - 8)^{\frac{1}{3}} \right]^3 = 4^3$$

$$6x - 8 = 64$$

$$6x = 72$$

$$x = 12$$

$$6. x^2 = \left[(x + 6)^{\frac{1}{2}} \right]^2$$

$$x^2 = x + 6$$

$$x^2 - x - 6 = 0$$

$$(x - 3)(x + 2) = 0$$

$$x = 3$$

Challenge

- 15.25
- 9
- No solution
- 19
- 5
- 3
- 5 or $-\frac{1}{9}$
- 8 or -1
- 7
- 6

Problem Solving

- Directly
- $d = \frac{s^2}{30f}$
 - About 58 ft
 - No; possible answer: his skid marks were only 52 ft, not 58 ft.
 - About 33 mi/h
- About 9 ft
 - By at least 15 ft
- B
- A