Name_____ Date _____

5.4 Practice A

In Exercises 1–6, solve the equation. Check your solution.

1. $\sqrt{3x - 2} = 5$ **2.** $\sqrt{6x + 1} = 9$ **3.** $\sqrt[3]{x + 10} = 4$

4. $\sqrt[3]{x} - 8 = -2$ **5.** $-3\sqrt{16x} + 14 = -10$ **6.** $6\sqrt[3]{25x} - 16 = 14$

7. Biologists have discovered that the shoulder height h (in centimeters) of a male Asian elephant can be modeled by $h = 62.5\sqrt[3]{t} + 75.8$, where t is the age (in years) of the elephant. Determine the age of an elephant with a shoulder height of 300 centimeters.

In Exercises 8–13, solve the equation. Check your solution(s).

8. $x - 8 = \sqrt{4x}$ **9.** $\sqrt{2x - 14} = x - 7$

10. $\sqrt{x + 22} = x + 2$ **11.** $\sqrt[3]{8x^3 + 27} = 2x + 3$

12. $\sqrt[4]{2 - 9x^2} = 3x$ **13.** $\sqrt{3x - 5} = \sqrt{x + 9}$

In Exercises 14–16, solve the equation. Check your solution(s).

14. $2x^{2/3} = 18$ **15.** $x^{3/4} + 10 = 0$ **16.** $(x + 12)^{1/2} = x$

17. Describe and correct the error in solving the equation.

$$\begin{aligned} \sqrt[3]{2x + 1} &= 8 \\ 2x + 1 &= 2 \\ 2x &= 1 \\ x &= \frac{1}{2} \end{aligned}$$

In Exercises 18–20, solve the inequality.

18. $3\sqrt{x} - 4 \geq 5$ **19.** $\sqrt{x - 3} \leq 7$ **20.** $5\sqrt{x - 1} > 10$

21. The length ℓ (in inches) of a standard nail can be modeled by $\ell = 54d^{3/2}$, where d is the diameter (in inches) of the nail.

  a. What is the diameter of a standard nail that is 2 inches long?

  b. What is the diameter of a standard nail that is 4 inches long?

  c. The nail in part (b) is twice as long as the nail in part (a). Is the diameter twice as long? Explain.