

5.4 Extra Practice

In Exercises 1–4, solve the equation. Check your solution.

1. $\sqrt{1-x} = 7$

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

3. $\frac{1}{4}\sqrt[4]{2x} + 6 = 10$

4. $2 - \sqrt[4]{2x-6} = 14$

5. The period P (in seconds) of a pendulum is given by the function $P = 2\pi\sqrt{\frac{L}{32}}$, where L is the pendulum length (in feet). A pendulum has a period of 1.5 seconds. Find the pendulum length.

In Exercises 6–11, solve the equation. Check your solution(s).

6. $\sqrt[3]{432 - 27x^3} = 3x$

7. $4\sqrt{x+1} = x+1$

8. $\sqrt{2x+2} - 3\sqrt{x+1} = 0$

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

10. $\frac{1}{2}x^{5/2} = 16$

11. $(6x+10)^{7/3} + 28 = 156$

In Exercises 12–14, solve the inequality.

12. $-4\sqrt{x-1} + 3 \geq -1$

13. $\sqrt[3]{\frac{2}{3}x+1} < 6$

14. $2\sqrt{\frac{3}{4}x} - 39 \leq -25$

15. In basketball, the term “hang time” is the amount of time that a player is suspended in the air when making a basket. A player’s hang time t (in seconds) is given by the function $t = 0.5\sqrt{h}$, where h is the height (in feet) of the jump. In a slam-dunk contest, players try to maximize their hang time. The second-place finisher had a hang time of 1 second, and the winner had a hang time of 1.2 seconds. How many feet higher did the winner jump than the second-place finisher?