

Solve each equation. If you get extraneous roots, you must state them in your answer. Show all your work on a separate sheet of notebook paper.

1) $\sqrt{x-9} = 4$

2) $\sqrt{x+2} = \sqrt{3-x}$

3) $8\sqrt{10x} - 7 = 9$

4) $\sqrt{-2x+3} - 2 = 10$

5) $\sqrt{3x+4} = -4$

6) $\sqrt{2x-4} = x-2$

7) $\sqrt{x} + 6 = x$

8) $\sqrt{x^2 + 13x + 37} = 1$

9) $\sqrt{x^2 - x + 1} = x + 1$

10) $\sqrt{x+2} = 7 - \sqrt{x+9}$

11) $\sqrt{x+4} = 1 + \sqrt{x-1}$

12) $\sqrt{2x-1} - \sqrt{x+3} = 1$

13) In an amusement park, a rider is suspended by a cable swinging back and forth like a pendulum from a tall tower. A rider's maximum speed v (in meters per second) occurs at the bottom of each swing and can be given using the equation, $v = \sqrt{2gh}$ where h is the height (in meters) at the top of each swing and g is the acceleration due to gravity ($g = 9.8 \text{ m/sec}^2$). If the maximum speed was 15 meters per second, what was the rider's height at the top of the swing?