

Solving Equations With Square Roots

Quick Review: To solve an equation that has a square root, get the radical by itself and square both sides. This may create a false solution so you must check your answer.

Example: Solve $x - 6 = \sqrt{x}$

solution: Square both sides to get $x^2 - 12x + 36 = x$ or $x^2 - 13x + 36 = 0$ which factors into $(x - 9)(x - 4) = 0$. This gives the answers $x = 9$ and $x = 4$. However, $x = 4$ does not check, so the only correct solution is $x = 9$.

Problems

Solve each equation for all values of the unknown. Some equations may not have any solution.

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

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

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

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

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

6. $\sqrt{x^2-5x} = 2-x$