

Solve the following. Check your solutions.

1. $\sqrt{x} = 5$

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

3. $\sqrt{x} - 6 = 4$

4. $\sqrt[3]{x} - 6 = 4$

5. $\sqrt{x} + 6 = 4$

6. $\sqrt[3]{x} + 6 = 4$

What happened in #5?

Why do you suppose that happened?

What do we call solutions that appear to work, but don't work in the original equation?

What other types of equations sometimes have these types of solutions?

Why did it work in #6?

Examples:

1. $\sqrt{2x - 3} = 11$

2. $\sqrt[3]{6 - x} = -3$

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

Steps for solving radical equations:

4. $\sqrt{x + 5} - 9 = -12$

5. $\sqrt{x^2 - 5x - 6} - 8 = 4$

6. $-12\sqrt{x - 6} = 18$

7. $3\sqrt[3]{x + 2} = 12$

8. $3\sqrt{6 - x} + 4 = 13$

$$9. \sqrt{6x - 4} = \sqrt{2x + 10}$$

$$10. \sqrt{9x - 4} = \sqrt{7x - 20}$$

$$11. \sqrt{x - 8} + \sqrt{x} = 2$$

$$12. \sqrt{x + 1} = \sqrt{x + 6} - 1$$