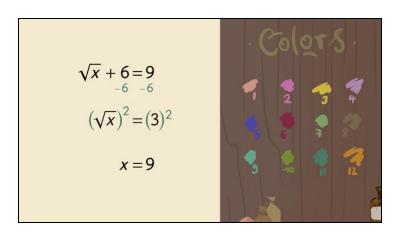Printable Worksheets from sofatutor.com

Solving Radical Equations

① **Explain how to solve radical equations.**

② Help Leo recall how to solve his radical equations.

③ Find the right color for $x = \sqrt{2x + 8}$ by solving for x.

④ Solve the radical equations.

⑤ Color in the different parts of the uniform with the right colors.

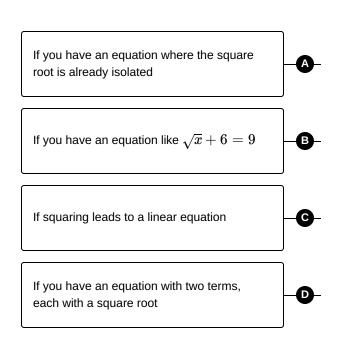⑥ Calculate the solutions to the given radical equations.
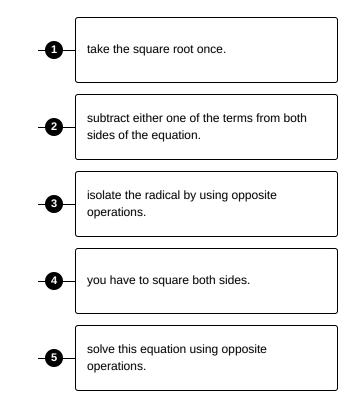
+ with lots of tips, answer keys, and detailed answer explanations for all of the problems.

⚠ The complete package, **including all problems, hints, answers, and detailed answer explanations** is available for all sofatutor.com subscribers.

Explain how to solve radical equations.

Match the elements.

If you have an equation where the square root is already isolated **A**

If you have an equation like $\sqrt{x} + 6 = 9$ **B**

If squaring leads to a linear equation **C**

If you have an equation with two terms, each with a square root **D**

1 take the square root once.

2 subtract either one of the terms from both sides of the equation.

3 isolate the radical by using opposite operations.

4 you have to square both sides.

5 solve this equation using opposite operations.

Hints for solving these problems

Explain how to solve radical equations.

Hint #1

The equation $x + 2 = 2x - 3$ is a linear equation.

Subtracting x and adding 3 leads to $x = 5$.

Checking this solution, we see that

$5 + 2 = 2 \times 5 - 3$ ✓

Hint #2

We always use the opposite of the given operation:

$$
\begin{aligned}
x + 2 &= 2x - 3 \\
-x &\quad -x \\
2 &= x - 3 \\
+3 &\quad +3 \\
5 &= x
\end{aligned}
$$

Hint #3

The opposite operation of a square root is squaring.

Answers and detailed answer explanations for these problems

Explain how to solve radical equations.

Answer key: A—4 // B—3 // C—5 // D—2

A radical equation is characterized by a square root. The opposite operation of a square root is squaring.

Let's have a look at an example: $\sqrt{x} = 2$ leads to $x = 4$ by squaring.

So no matter what you have to square to get rid of a square root. But you can only do this if the square root is isolated. Otherwise you have to use opposite operations. For example:

$$\begin{aligned} \sqrt{x} + 6 &= 9 \\ -6 \quad & \quad -6 \\ \sqrt{x} &= 3 \end{aligned}$$

Now you can square again.

Sometimes squaring leads to further equations, for example linear equations. You still have to use the methods you've already learned, like opposite operations, to solve these kinds of equations.