Section 8.6 Solving Radical Equations

# Objective 1: Solving Equations That Contain Radical Expressions

In this section, we shift from working with radical expressions to working with **radical equations**. Radical equations are equations that contain radical expressions. We will use the power rule to solve radical equations.

**Power Rule:**

If both sides of an equation are raised to some power, all solutions of the original equation are among the solutions of the new equation.

Solve the equation.

|  |  |
| --- | --- |
| a. $\sqrt{2x-3}=9$ | b. $\sqrt[3]{x+5}=-2$ |

Notice that the power rule does not say that raising both sides of an equation to a power produces an equivalent equation. A solution of the new equation may or may not be a solution of the original equation. Check the solutions for the two equations above to confirm that they are solutions of the original equation.

When solving a radical equation, each solution found must be checked in the original equation. Recall that a proposed solution that is not a solution of the original equation is called an extraneous solution.

Solve the equation.

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| --- | --- |
| c. $\sqrt{5x+1}+3=0$ | d. $\sqrt[3]{5x+1}+3=0$ |

|  |  |
| --- | --- |
| e. $\sqrt{27-x}=x+3$ | f. $\sqrt{x+40}+\sqrt{x-5}=9$ |

|  |  |
| --- | --- |
| g. $x-\sqrt{2-x}=-10$ | h. $\sqrt{2x-5}+\sqrt{x+6}=0$ |