Goals:
- I can solve equations containing radicals.
- I can solve inequalities containing radicals.

STEPS TO SOLVING RADICAL EQUATIONS

1. Isolate the radical on one side of the equation.
2. Raise each side of the equation to a power equal to the index of the radical to eliminate the radical.
3. Solve the resulting polynomial equation. Check your results.

Definition:

Extraneous solution—a number that doesn't satisfy the original equation

Example 1: **Solve Radical Equations**

a. $\sqrt{x + 2} + 4 = 7$

Subtract 4 from each side to isolate the radical.

Square each side to eliminate the radical.

Find the squares.

Subtract 2 from each side.

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

Example 2: **Solve a Cube Root Equation**

$$2(6x - 3)^{\frac{1}{3}} - 4 = 0$$

Add 4 to each side.

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Cube each side.

Evaluate the cubes.

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Divide each side by 6.

Example 3: **What is the solution of** $\quad 3\left(\sqrt[4]{2x + 6}\right) - 6 = 0$