



Essential Question: How can I determine the solutions to equations involving rational exponents & radicals?

Questions / Big Ideas

Key Term

Inverse Operations \equiv Mathematical operations that undo (reverse) one another.

- Example: $x^2 = 25$ $x^3 = 10$
 $\sqrt{x^2} = \sqrt{25}$ $\sqrt[3]{x^3} = \sqrt[3]{10}$
 $x = 5$ $x = 10^{\frac{1}{3}}$

Solving Rational Expressions and Radicals for a Given Variable

- If helpful, identify equivalent forms of each side of the equation.
- Use inverse operations (roots and reciprocal fractions) to undo operations.
- Simplify and rewrite the expressions (if requested), showing the isolated variable.

- Example: $x^5 = \sqrt[3]{4}$
 $x^5 = 4^{\frac{1}{3}}$ Rewrite radical as rational exponent
 $x^{5 \cdot \frac{1}{5}} = 4^{\frac{1}{3} \cdot \frac{1}{5}}$ Multiplicative inverse (reciprocal)
 $x = 4^{\frac{1}{15}}$ Simplify fraction
 $x = \sqrt[15]{4}$ Rewrite as a radical

- Think: Is there another way you could have solved for x?

Questions / Big Ideas

Guided Practice

1. For $x^2 = \sqrt[4]{7}$, solve for x.

2. For $x^3 = 17$, solve for x.

3. For $x^{-\frac{3}{2}} = 125$, solve for x.

Summary: _____
