Warm Up

1. Simplify

$$\sqrt{18x^3y^4}$$

2. Solve this system of equations.

$$2x + 3y = 20$$

 $-2x + y = 4$

3. Find the zeros of this function.

$$y = x^2 + 2x - 3$$

CHECK IN

Name one productive thing you would like to accomplish (or get done) over Thanksgiving Break.

7.5 Solving Radical Equations

Objective: We can solve radical equations.

Multiplying Radicals

What is the simplified form of each expression?

A.
$$\sqrt{10}(\sqrt{6} + 3)$$

B.
$$(\sqrt{6} - 2\sqrt{3})(\sqrt{6} + \sqrt{3})$$

Conjugates are the sum and difference of the same two terms. For example, $\sqrt{7} + \sqrt{3}$ and $\sqrt{7} - \sqrt{3}$ are conjugates.

Conjugates can be used to simplify a quotient whose denominator is a sum or difference of radicals.



What is the simplified form of

$$\frac{10}{\sqrt{7}-\sqrt{2}}$$

Solving Radical Equations

A radical equation is an equation that has a variable in a radicand.

An extraneous solution is an apparent solution that does not satisfy the original equation.

$$\sqrt{x} + 7 = 16$$
 ?

Steps

- 1. Get the radical by itself on one side of the equation.
- 2. Square both sides.
- 3. Simplify

***The expression under the radical must be nonnegative.

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

Steps

- 1. Get the radical by itself on one side of the equation.
- 2. Square both sides.
- 3. Simplify

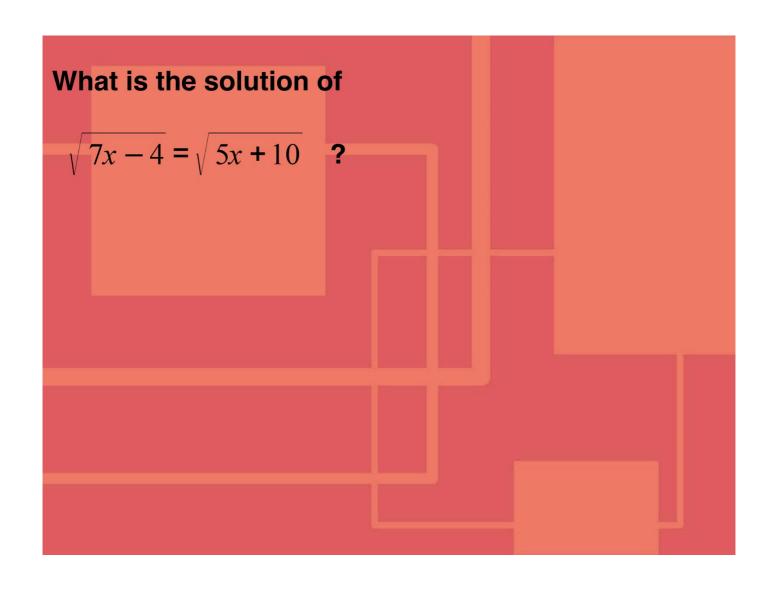
***The expression under the radical must be nonnegative.

$$\sqrt{5t-11} = \sqrt{t+5}$$
 ?

Steps

- 1. Get the radical by itself on one side of the equation.
- 2. Square both sides.
- 3. Simplify

***The expression under the radical must be nonnegative.



$$n = \sqrt{n+12}$$

Steps

- 1. Get the radical by itself on one side of the equation.
- 2. Square both sides.
- 3. Simplify

4. ALWAYS SUBSTITUTE
EACH SOLUTION INTO
THE ORIGINAL EQUATION
TO CHECK FOR
EXTRANEOUS SOLUTIONS.

$$\sqrt{3y} + 8 = 2$$

Steps

- 1. Get the radical by itself on one side of the equation.
- 2. Square both sides.
- 3. Simplify

4. ALWAYS SUBSTITUTE
EACH SOLUTION INTO
THE ORIGINAL EQUATION
TO CHECK FOR
EXTRANEOUS SOLUTIONS.

Write in complete sentences.
Your first sentence will be: 1) A conjugate is

Review: Unit 3

- 1. Write everything you know about solving the problems on your paper. All of the problems fall under at least one of these topics.
- -Law of Sines
- -Law of Cosines
- -Trigonometric Ratios
- -Angle of Elevation and Depression
- -Special Right Triangles (30-60-90 & 45-45-90)

Exit Ticket

Simplify.

1.
$$4\sqrt{7} + \sqrt{125} - \sqrt{80}$$

2.
$$\sqrt{3}(3\sqrt{2}+\sqrt{3})$$

Solve.

3.
$$\sqrt{x} - 2 = 0$$

4.
$$\sqrt{3x-2}+3=7$$

5. To the nearest tenth, how tall is the brick wall?

