10-3 Operations with Radical Expressions

Alg 1

Adding & Subtracting Radicals

Rules are the same as adding & subtracting monomials !!!!

- **you can only add LIKE radicals**
- **add the coefficients**
- **keep the radiacl the same**

Monomials	Radicals
$2x + 7x = 9x$	$2\sqrt{11} + 7\sqrt{11} = 9\sqrt{11}$
$15y - 3y = 12y$	$15\sqrt{2} - 3\sqrt{2} = 12\sqrt{2}$

Example 1 - Expressions with Like Radicals

Simplify each expression.

$4\sqrt{3} + 6\sqrt{3} - 5\sqrt{3}$

$12\sqrt{5} + 3\sqrt{7} + 6\sqrt{7} - 8\sqrt{5}$

Example 2 - Expressions with Unlike Radicals

Simplify.

$$6\sqrt{27} + 8\sqrt{12} + 2\sqrt{75}$$

$$2\sqrt{20} + 3\sqrt{45} + \sqrt{180}$$

Example 3 - Multiply Radical Expressions

Find each product.

$(4\sqrt{6} - 2\sqrt{10})(5\sqrt{3} + 7\sqrt{5})$

$(4\sqrt{5} - 2\sqrt{3})(3\sqrt{6} - \sqrt{10})$

11-3 Radical Equations

Alg 1

- Get the radical on one side all by itself
- Square both sides
- CHECK YOUR SOLUTIONS!!!

CHECK

$$\sqrt{x+1} + 7 = 10$$

$$\sqrt{x-3} + 8 = 15$$

Variable on each side

Answer may contain extraneous solution

CHECK

$$\sqrt{2 - y} = y$$

$$\sqrt{x + 2} = x - 4$$