Objectives:

- Add and Subtract Rational Expressions.
- Multiply Radical Expressions.

Definition:

Two radicals are called "like radicals" if each radical has the same **index** and the same **radicand** (term inside of the radical).

Example:

$\sqrt[4]{x-2}$ and $5\sqrt[4]{x-2}$ are "like radicals" with different coefficients.

To Add or Subtract Radical Expressions:

Step 1: Simplify all of your radicals (pull out perfect squares, or cubes, etc.), if necessary.

Step 2: Add or subtract the COEFFICIENTS ONLY of the like radicals. The values inside the radicals will not change. This is just like adding or subtracting polynomials with like terms.

Lesson 7.4: Adding, Subtracting, and Multiplying Rational Expressions

Examples:

a.) $3\sqrt{5x} + 7\sqrt{5x}$

b.) $5\sqrt[3]{11} - 8\sqrt[3]{11} + \sqrt[3]{11}$

Lesson 7.4: Adding, Subtracting, and Multiplying Rational Expressions

Examples:

c.) $3\sqrt{20} + 8\sqrt{45}$

d.) $6x\sqrt{12x} - 5\sqrt{3x^3}$

Examples:

e.) $2\sqrt{11} + 8\sqrt{6}$

f.) $\sqrt[3]{-54x^4} + 5x\sqrt[3]{2x} + x\sqrt[3]{16x}$

Examples:

g.) $2\sqrt{a^2b} - 5a\sqrt[6]{b^3}$

Lesson 7.4: Adding, Subtracting, and Multiplying Rational Expressions

Multiplying Radical Expressions:

- Key Idea: You *must* have the same index on the radicals in order to combine the radicands!

- Multiply outside coefficients, and multiply radicands (outsides stay outside, insides stay inside).

- When multiplying radical expressions, we use the Distributive Property.

Examples:

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

i.) $(8-3\sqrt{2})(5+7\sqrt{2})$

Examples:

j.) $(5\sqrt{7}+\sqrt{2})^2$

k.) $(8+\sqrt{5})(8-\sqrt{5})$

Homework:

Pg. 564: # 7-33 odds, 37, 41, 43, 47, 51, 55, 57, 63, 65, 69, 71, 75, 83, 89, 91, 95

(30 problems)