Algebra 1.5 7.1 **Simplifying Radical Expressions**

* Evaluate rational expressions.
* Find numbers that cause a rational expression to be undefined.
* Simplify rational expressions containing only monomials.
* Simplify rational expressions containing multiterm polynomials.

***Rational expression:*** An expression that can be written in the form ­­­­\_\_\_\_\_\_\_\_\_\_, where *P* and *Q* are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and *Q*\_\_\_\_\_0.

Some rational expressions are:

**Example 1:**  Evaluate the expression $\frac{7x-9}{x+1}$ when

 a. *x* = 2 b. *x* = –1

To **determine** the value(s) that **make** a rational expression **undefined**,

**1**. Write an equation that has the ­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ set equal to \_\_\_\_\_\_\_\_\_\_\_.

**2**. \_\_\_\_\_\_\_\_\_\_ the equation.

**Example 2a:** Find every value for the variable that makes the expression$ \frac{4z}{6z-5}$ undefined.

**Example 2b:** Find every value for the variable that makes the expression$ \frac{6}{y^{3}+5y^{2}+4y}$ undefined.

**To simplify a rational expression to lowest terms:**

1. Factor the numerator and denominator \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

2. Divide out all the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the numerator and denominator.

3. Multiply the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the numerator and the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_ in the denominator.

**Example 3:** Simplify $\frac{4x^{7}}{24x^{3}}$

**Example 4a:** Simplify $\frac{-6a}{42a^{5}}^{3}$

**Example 4b:** Simplify $\frac{24xy^{2}z^{2}}{72x^{2}y^{4}}$

**Example 5:** Simplify$\frac{6x}{2x+4}$

**Example 6a:** Simplify $\frac{6x^{2}+12x}{7x^{2}+14x}$

**Example 6b:** Simplify $\frac{y^{2}-25}{y^{2}-2y-15}$

**Example 6c:** Simplify

**Example 7:** Simplify

**Example 8:** Simplify



**Homework:** Page 495 # 8-12 even, 16-76 by 4s