Integrated Math 3   Name: _____

Unit 7: Modeling Rational Representations

7.1   Date: _____   Period: _____

Part I Objective: To simplify and multiply rational expressions

Warm Up:

1. Factor the following expressions.

   a. $x^2 + 3x - 4$ b. $4x^2 - 9$ c. $6x^2 + x$

2. Simplify the following expressions.

   a. $x^3 x^2 =$ b. $\frac{x^5}{x^2} =$

Vocabulary:

Simplified Form: A rational expression that has no common factors in the numerator and denominator.

Extraneous Solution: A solution of a simplified version of the equation that does not satisfy the original equation.

Excluded Value: The value of a variable that will make the denominator equal to zero.

Example 1: Simplify the expression and identify the excluded values.

a. $\frac{x^2+5x}{x^2}$ b. $\frac{6x+24}{x^2+7x+12}$

Example 2: Multiply, simplify, and identify the excluded values.

a. $\dfrac{5x-15}{4x^2} \cdot \dfrac{x^3}{6x-18}$

b. $\dfrac{4xy^3}{x^2y} \cdot \dfrac{y}{8x}$

c. $\dfrac{6x-12}{x^2-9x+18} \cdot \dfrac{7x-21}{5x-10}$

d. $\dfrac{2x^2-2}{x^2-6x-7} \cdot (x^2 - 10x + 21)$

Part II Objective: To divide rational expressions

Dividing Fractions

Dividing by a fraction is the same as multiplying by its reciprocal

Division Rule: $\dfrac{a}{b} \div \dfrac{c}{d} = \dfrac{a}{b} \cdot \dfrac{d}{c}$

Example 3: Divide, simplify, and identify the excluded values.

a. $\dfrac{5x}{3x-12} \div \dfrac{x^2-2x}{x^2-6x+8}$

b. $\dfrac{3}{x-8} \div \dfrac{x^2+3x}{x^2+x-6}$

c. $\dfrac{x^2+5x-24}{2x+2} \div \dfrac{3x+24}{x^2-8x-9}$