March 12, 2018

10-1 Multiplying and Dividing Rational Expressions

10-1a I can multiply and divide rational expression and simplify using factoring.
10-1b I can simplify a rational expression.

Multiply Rational Numbers

$$\frac{2}{3} \cdot \frac{4}{3}$$

$$-\frac{4}{5} \cdot \frac{5}{2}$$

Multiply Rational Expressions

$$\frac{1}{x} \bullet \frac{x}{4}$$

$$\frac{x^2}{2} \bullet \frac{3}{x}$$

Vocab

Excluded Value – number we plug in for x that forces us to divide by 0

$x \neq 1$

Find the product and any excluded values

$$\frac{(x+1)}{3} \bullet \frac{4}{(x+1)} = \frac{4x+4}{3x+3}$$

$$\frac{4 \cdot (x+1)}{3 \cdot (x+1)} = \frac{4}{3}$$

Find the product and any excluded values

$$\frac{3x^2}{(x-4)} \cdot \frac{2(x+2)}{(x-3)}$$

$6x^2$

$\cancel{3x^2} \cdot \cancel{2}(x+2)$

$(x-4)(x-3)$

$x \neq 4, 3$

Find the product and any excluded values

$$\frac{x}{(x-9)} \bullet \frac{(3x-27)}{(x+1)}$$

$3(x-9)$

$$\frac{x \cdot 3(x-9)}{(x-9)(x+1)} = \frac{3x}{x+1}$$

$x \neq -1$

Dividing Rationals:

Keep, Change, Flip

Dividing Rational Numbers

$$\frac{2}{3} \div \frac{4}{3}$$

$$\frac{2}{3} \cdot \frac{3}{4} = \frac{6}{12}$$

$$-\frac{4}{5} \div \frac{5}{2}$$

Dividing Rational Expressions

$$\frac{1}{x} \div \frac{x}{4}$$

$$\frac{x^2}{2} \div \frac{x}{3}$$

$$\frac{x^2}{2} \cdot \frac{3}{x} = \frac{3x^2}{2x}$$

Divide and find any excluded values

$$\frac{(x+1)}{3} \div \frac{(x+1)}{4}$$

$$\frac{4}{x+1}$$

$$\frac{4(x+1)}{3(x+1)}$$

$$\frac{x+4}{x+3}$$

Divide and find any excluded values

$$\frac{x}{(x+1)} \div \frac{3}{(x-2)}$$

$\frac{x-2}{3}$

$$\frac{x(x-2)}{3(x+1)} \quad x \neq -1$$

Divide and find any excluded values

$$\frac{2x^2}{(x^2+1)} \div \frac{4}{(x-2)}$$