

7.2 Multiplying and dividing rational expressions

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Pre-Calculus 11

7.2 Multiplying & Dividing Rational Expressions

Name: _____

The strategies for multiplying and dividing rational numbers can be used to multiply and divide rational expressions. All NPV's of each expression being multiplied or divided must be stated.

be careful when you cancel
Example 1: Simplify each expression:

a. $\frac{\cancel{2a} \cdot \cancel{3b^2}}{\cancel{3a} \cdot 5a^2}$ NPV's
 $a \neq 0$

$$= \frac{2b^2}{5a}$$

b. $\frac{\cancel{2x^2}(\cancel{x+2}) \cdot 5(x-4)}{\cancel{3x} \cdot \cancel{4x}(\cancel{x+2})}$ NPV's
 $x \neq 0$
 $x+2 \neq 0$
 $x \neq -2$

$$= \frac{5(x-4)}{12}$$

c. $\frac{7n^3}{4} \div \frac{(7n)^2}{-12}$ NPV's
 $n \neq 0$

$$= \frac{7n^3}{4} \times \frac{-12}{(7n)^2}$$

$$= \frac{\cancel{7}n^3}{4} \times \frac{-\cancel{12}^3}{\cancel{7}^2 n^2}$$

$$= -\frac{3n}{7}$$

d. $\frac{5(x-3)}{2x} \div \frac{10(x-3)}{3x(x+5)}$ NPV's
 $x \neq 3$
 $x \neq -5$
 $x \neq 0$

$$= \frac{\cancel{5}(\cancel{x-3})}{\cancel{2x}} \cdot \frac{3x(\cancel{x+5})}{\cancel{2x} \cdot \cancel{10}(\cancel{x-3})}$$

$$= \frac{3(x+5)}{4}$$

[Type here]

When a polynomial in the numerator or denominator is a binomial or polynomial, it may be factored before simplifying the expression.

Example 2: Simplify each expression: *Factor first, then look for your NPV's *

a. $\frac{x^2 + 9x + 20}{2x^2 + 6x - 8} \cdot \frac{x^2 - 1}{3x + 15}$

$$= \frac{(x+4)(x+5)}{2(x^2 + 3x - 4)} \cdot \frac{(x-1)(x+1)}{3(x+5)}$$

$$= \frac{\cancel{(x+4)}\cancel{(x+5)}}{2\cancel{(x+4)}(x-1)} \cdot \frac{\cancel{(x-1)}(x+1)}{3\cancel{(x+5)}}$$

$$= \frac{x+1}{6}$$

NPV's

$$x \neq -4$$

$$x \neq 1$$

$$x \neq -5$$

b. $\frac{x-2}{3x-21} \div \frac{3x^2-12}{3x^2-12x-63} \rightarrow 3(x^2-4)$

$$= \frac{\cancel{x-2}}{3\cancel{(x-7)}} \cdot \frac{3\cancel{(x-7)}(x+3)}{3\cancel{(x-2)}(x+2)}$$

$$= \frac{x+3}{3(x+2)}$$

NPV's

$$x \neq 7$$

$$x \neq 2$$

$$x \neq -2$$

$$x \neq -3$$

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Quiz Tuesday 7.1-7.2