8-4.notebook March 29, 2017

## Section 8-4 Rational Expressions

Students will be able to:
-simplify rational expressions
-multiply and divide rational expressions

A rational expression is the quotient of 2 polynomials.

It is in simplest form when its numerator and denominator are polynomials that have no common divisors.

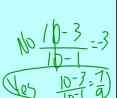
To simplify, start by factoring: any

Also, state g: any restrictions on the functions

$$\frac{x^2 - x - 6}{x^2 + x - 2} = (x-3)(x+2)$$

e functions  $\chi \neq -2$ 





For review:

$$\frac{1}{5} \cdot \frac{1}{10} = \frac{1}{50}$$

Now try:

$$\frac{1}{3x} \cdot \frac{1}{5x} = \frac{1}{15\sqrt{2}}$$

To multiply two rationals, factor all polynomials, multiply the two numerators and the two denominators and then reduce.

$$\frac{2x-8}{x^{2}-16} \cdot \frac{x^{2}+5x+4}{x^{2}+8x+16} \qquad \chi = \frac{2(x-4)}{(x+4)(x-4)} \cdot \frac{(\chi+4)(\chi+1)}{(\chi+4)(\chi+4)} = \frac{2(\chi+4)(\chi+4)}{(\chi+4)(\chi+4)} = \frac{2(\chi+4)(\chi+4)}{(\chi+4)(\chi+4)} = \frac{2(\chi+1)}{(\chi+4)(\chi+4)} = \frac{2(\chi+1)}{(\chi+4)(\chi+4)} = \frac{2(\chi+1)}{(\chi+4)^{2}}$$

Another way to multiply is to first factor and cross reduce, then multiply anything remaining.

$$\frac{q^2-1}{q^2} \cdot \frac{q}{q+1}$$

$$\frac{(q+1)(q-1)}{2} \cdot \frac{q}{(q+1)}$$

Division by a fraction is the same as multiplication by the reciprocal.

c+5 c-5

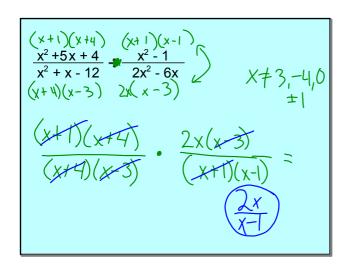
Divide:

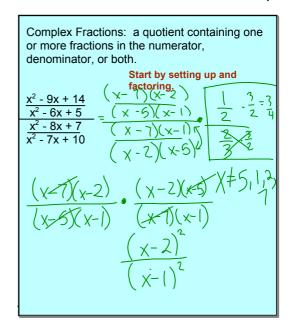
 $\frac{c+5}{c-8} + \frac{c-5}{c-8} \sum_{n=0}^{\infty}$ 

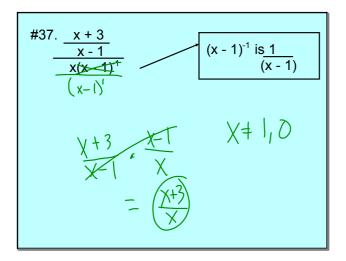
$$\frac{C+5}{C+5} = \frac{C+5}{C-5} = \frac{C+5}{C-5}$$

×+8,5

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Hwk: pg. 531 - 532 #8 - 24 evens, 28, 31 - 33 all, 36, 42, 48, 49