

## Lesson 3 Dividing Rational Expressions

### Steps for Dividing:

- Factor and state restrictions (before multiplying by the reciprocal).
- Multiply by the reciprocal.
- State restrictions of "new" denominator.
- Divide out any like factors.
- State simplified rational expression.

### Examples

Simplify and state restrictions.

$$1. \frac{7n^3}{4} \div \frac{(7n)^2}{-12}$$

$$\frac{7n^3}{4} \cdot \frac{-12}{(7n)^2} \quad n \neq 0$$

$$\frac{\cancel{7}n^{\cancel{3}}}{\cancel{4}} \cdot \frac{-\cancel{12}^3}{\cancel{49}n^{\cancel{2}}} \quad -\frac{3n}{7}$$

$$2. \frac{5(x-3)}{2x} \div \frac{10(x-3)}{3x(x+5)}$$

$$\frac{\cancel{5}(x-\cancel{3})}{\cancel{2x}} \cdot \frac{\cancel{3x}(x+5)}{\cancel{10}(x-\cancel{3})} \quad x \neq -5, 0, 3$$

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

# L3 Dividing Rational Expressions.notebook

## Pre-Calculus 11 Enriched Rational Expressions & Equations

$$3. \frac{4-x^2}{5x-10} \div \frac{3x-15}{x-5}$$

$$\frac{-(x^2-4)}{5x-10} \cdot \frac{x-5}{3x-15}$$

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

$$\frac{-(x+2)}{15}$$

$x \neq 2, 5$

GCF  
Diff of squares  
PSF (trinomials)

$$4. \frac{2x^2+3x-2}{2x-1} \div \frac{4-x^2}{1}$$

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

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

$$\frac{-1}{x-2}$$

P -4  
S 3  
F  $\frac{4}{2}, -\frac{1}{1}$

$x \neq \pm 2, \frac{1}{2}$

$-\frac{1}{(x-2)}$

$\frac{1}{-x+2}$

$$5. \frac{6x}{2x^2+3x-9} \div \frac{8x^4}{4x^2-9}$$

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

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

P -18  
S 3  
F  $\frac{6}{2}, -\frac{3}{1}$

$x \neq -3, \pm \frac{3}{2}, 0$

riddle sheet  
# 6, 9, 12, 14, 15  
20, 22, 24, 29,  
31, 34, 36, 39, 40