

# 5.1

Date: 11/9/23

Objective: I can simplify a rational fraction.

## Review

Rational Number:

a # that can be written as a fraction

Expression:

math phrase, no =

Rational Expression:

math phrase with var in denominator

Simplify:  $\frac{6}{8}$

WAY 1:

$$\frac{6 \div 2}{8 \div 2} = \frac{3}{4}$$

WAY 2:

$$\frac{6}{8} = \frac{2 \cdot 3}{2 \cdot 2 \cdot 2} = \frac{3}{4}$$

## Steps for simplifying rational expressions

1. FACTOR!!!!!!!

Types:

2. Make ones.

3. Write what is left. DO NOT MULTPLY!

EXAMPLES: Simplify.

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

~~$\frac{2 \cdot 2}{2(x^2+2)}$~~   
 $\frac{2}{x^2+2}$

2.  $\frac{(x+4)(x-3)}{(x-6)(x+4)}$

$\frac{x-3}{x-6}$

3.  $\frac{4x^2+2x+1}{8x^3-1}$

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

4.  $\frac{(4x+3)(x-2)}{3x^2+2x-16}$

~~$\frac{(4x+3)(x-2)}{(3x+8)(x-2)}$~~   
 $\frac{4x+3}{3x+8}$

5.  $\frac{3b^2-20b-32}{7b-56}$

~~$\frac{(3b+4)(b-8)}{7(b-8)}$~~   
 $\frac{3b+4}{7}$

~~$\frac{-24 \times 4}{-20}$~~   
 $\frac{3b^2-24b+4b-32}{3b(b-8)+4(b-8)}$

6.  $\frac{5x^2-5x}{1-x}$

~~$\frac{5x(x-1)}{-1(x-1)}$~~   
 $-5x$

7.  $\frac{r-3}{r^2-6r+9}$

~~$\frac{(4x-3)(x+7)}{(4x-3)(4x+3)}$~~   
 $\frac{x+7}{4x+3}$

8.  $\frac{4x^2+25x-21}{16x^2-9}$

~~$\frac{-28 \times 3}{25}$~~   
 $\frac{4x^2+28x-3x-21}{4x(x+7)-3(x+7)}$

9.  $\frac{v^2+11v+28}{v^2+15v+56}$

~~$\frac{(v+7)(v+4)}{(v+8)(v+7)}$~~   
 $\frac{v+4}{v+8}$