

Lesson 44 Objective: SWBAT add and subtract rational expressions with like denominators.

Kickoff: Simplify the following!

$$\frac{2x^2 - 2x - 4}{x^2 + 2x - 8} + \frac{4x^2 - 100}{x^2 - x - 20} \cdot \frac{3x^2 + 15x}{x + 1}$$

$$\frac{2(x^2 - x - 2)}{x^2 + 2x - 8} \cdot \frac{x^2 - x - 20}{4x^2 - 100} \cdot \frac{3x^2 + 15x}{x + 1}$$

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

$$\frac{1(3x)}{2} = \frac{3x}{2}$$

Homework

6)  $\frac{4}{5}$

7)  $\frac{4a - 6b}{a + 6b}$

8)  $-x + 3$

9)  $\frac{2x + 3}{x + 3}$

10)  $\frac{2x + 2}{x + 4}$

7)  $\frac{(2a - 3)(a + b)}{(a - 6b)(a + 6b)} \cdot \frac{8(a - 6b)}{4(a + b)}$

$$\frac{4a - 6b}{a + 6b}$$

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

Test/Quiz Review

Adding and Subtracting Rational Expressions (like denominators)

Try This: Simplify

1)  $\frac{2}{5} + \frac{8}{5} = \frac{10}{5}$

2)  $\frac{7}{10} - \frac{3}{10} = \frac{4}{10}$

3)  $(8a - 4c) + (-7a + 3b + 6c)$

$15a - 3b - 10c$

$15a - 3b - 10c$

Add/Subtract Rational Expressions

- 1) Make sure the denominator is the same.
- 2) Add/Subtract  
\* - = distribute.
- 3) Factor completely
- 4) Simplify.

Examples:

1)  $\frac{3x}{5} + \frac{4x}{5} + \frac{3x}{5} = \frac{10x}{5} = 2x$

2)  $\frac{9a}{7b} - \frac{5a}{7b} + \frac{3a}{7b}$

$$\frac{7a}{7b} = \frac{a}{b}$$

3)  $\frac{x^2-4x}{2x^2} + \frac{5-4x}{2x^2}$

$$\frac{x^2-4x}{2x^2} = \frac{x(x-4)}{2x^2}$$

$\frac{x-4}{2x}$

4)  $\frac{7y-3}{9-y^2} + \frac{15}{9-y^2}$

$$\frac{6y-18}{9-y^2}$$

$$\frac{6(y-3)}{(3-y)(3+y)}$$

$$\frac{-6}{3+y}$$

Practice:

1)  $\frac{7x}{18} - \frac{5x}{18}$

2)  $\frac{r+2}{6} - \frac{r+3}{6}$

3)  $\frac{4y}{y-3} - \frac{12}{y-3}$

4)  $\frac{4x+9}{4x} + \frac{1-4x}{4x}$

5)  $\frac{x}{x+1} - \frac{1}{x+1}$

6)  $\frac{3x-5}{xy} + \frac{2x+3}{xy} - \frac{x-2}{xy}$

7)  $\frac{y}{y^2-36} + \frac{6}{y^2-36}$

8)  $\frac{7x+3}{x^2-1} - \frac{6x+4}{x^2-1}$

9)  $\frac{6y+13}{y^2-4y-21} - \frac{y-2}{y^2-4y-21}$

10)  $\frac{x^2+3x}{x+2} + \frac{2x+6}{x+2}$