

Monday 1/13/19

1. Grab Notes/Calc
2. Begin Warm-up
3. Add/Subtract Rational Expression (like denominators)



**What am I learning today?**      Date: 1/13/20

S.W.B.A.T. combine like terms and factor completely  
I.O.T. find the sum or difference of two rational expressions.

**Topic:** Adding & Subtracting Rational Expressions (Like Denom.)

**Name:** \_\_\_\_\_

**What am I learning today?**

**Warm-Up**

$$\begin{array}{r} M | A \\ -20 | 1 \\ \hline 5, -4 \\ \hline = \frac{x(x-4)}{x} \end{array}$$

Perform the following operations on the following rational expressions:

1.  $\frac{x^2-4x}{x} \div \frac{x^2+x-20}{x+2}$

KCF

$$= \frac{x^2-4x}{x} \cdot \frac{x+2}{x^2+x-20}$$

$$= \frac{x(x-4)}{(x+5)(x-4)} = \frac{x+2}{x+5}$$

2.  $\frac{x-6}{x^2-36} \cdot \frac{3x-15}{x^2-4x-5}$

$$= \frac{(x-6)}{(x+6)(x-6)} \cdot \frac{3(x-5)}{(x-5)(x+1)}$$

$$= \frac{3}{(x+6)(x+1)}$$

**Recall**

$$\frac{5}{7} - \frac{2}{7}$$

In order to add and subtract fractions, you must have a **common denominator**

Ex:

1.  $-\frac{2}{7} + \frac{5}{7}$

$$= \frac{-2+5}{7}$$

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

$\frac{4}{5} - \frac{8}{15}$

$$\frac{12}{15} - \frac{8}{15}$$

$$= \frac{4}{15}$$

LCD:

$\frac{4}{3} - \frac{3}{7}$

$$\frac{28}{21} - \frac{9}{21}$$

$$= \frac{19}{21}$$

LCD: 24

$\frac{7}{6} + \frac{3}{8}$

$$\frac{28}{24} + \frac{9}{24}$$

$$= \frac{37}{24}$$

**Adding & Subtracting Rationals**

Common Denominator

- In order to add or subtract a rational, you must have a common denominator.
- We already have a common denominator, so we can add/subtract the numerators and simplify.
- If subtraction, we must **distribute** the minus sign.  $( \quad ) - ( \quad )$

Steps:

1. Rewrite numerators with the 2nd expression in parentheses all over one denominator.
2. Distribute "-1" in a subtraction expression.
3. Combine like terms
4. Factor, if possible
5. Simplify

**Topic:** Adding & Subtracting Rational Expressions (Like Denom.)

**Date:** \_\_\_\_\_

**Examples**

① CD ✓

Perform the operation between the rational expressions and simplify completely.

$$1. \frac{8x^2}{x+4} + \frac{2x^2}{x+4} = \frac{8x^2 + 2x^2}{(x+4)} = \frac{10x^2}{(x+4)}$$

$$2. \frac{m+9}{m+3} - \frac{-4m-6}{m+3} = \frac{m+9 - (-4m-6)}{(m+3)}$$

$$= \frac{m+9+4m+6}{(m+3)} = \frac{5m+15}{(m+3)} = \frac{5(m+3)}{(m+3)}$$

$$= \frac{5}{1} = 5$$

$$3. \frac{2y^2+4y-3}{y+3} - \frac{y^2-2y-12}{y+3} = \frac{2y^2+4y-3 - (y^2-2y-12)}{y+3}$$

$$= \frac{2y^2+4y-3-y^2+2y+12}{y+3} = \frac{y^2+6y+9}{y+3} = \frac{(y+3)(y+3)}{(y+3)}$$

$$= \frac{y+3}{1} = y+3$$

**You Try**

Perform the operation between the rationals and simplify completely.

$$1. \frac{2x}{x^2-9} + \frac{6}{x^2-9} = \frac{2x+6}{x^2-9} = \frac{2(x+3)}{(x+3)(x-3)} = \frac{2}{x-3}$$

$$2. \frac{x^2-2}{x^2+4x-21} - \frac{x+4}{x^2+4x-21} = \frac{x^2-2-(x+4)}{x^2+4x-21} = \frac{x^2-2-x-4}{x^2+4x-21} = \frac{x^2-x-6}{x^2+4x-21} = \frac{(x-3)(x+2)}{(x-3)(x+7)} = \frac{x+2}{x+7}$$

**Summary**

Summarize the lesson in your own words