Friday 1/17/20

1. Get Notes & Calc.

2. Take out HW

3. Add/Subt. unlike Denom. Rational Expression Notes

4. HW

Reminders:

- No School Monday
- Unit 4 Test 1 - Tues. 1/28

Topic: Adding and Subtracting Rationals w/Unlike Denominators **Name**: _____

What am I learning today?

Warm-Up

Add or Subtract.

1) $\frac{2x-3}{x+4} - \frac{x-7}{x+4}$ $= \frac{(2x-3)-(x-7)}{x+4}$ $= \frac{2x-3-x+7}{x+4}$ $= \frac{x+4}{x+4}$

2) $\frac{4x+7}{x+5} + \frac{x-6}{x+5}$ $= \frac{(4x+7)+(x-6)}{x+5}$ $= \frac{5x+1}{x+5}$

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

Notes
The least common denominator

Recall: In order to add/subtract a rational expression, you must have a **common denominator.**

Finding the Least Common Denominator

If you do not have a common denominator, you must find one before you can add/subtract. We call this the least common denominator (LCD).

Steps:

1. **Factor First**! Factor both denominators.
2. Find a combination of the same factors of both denominators. Do not repeat any factors this is why its called the least common.

Factors of polynomial ⇒ same factors under each fraction

Examples

Find the least common denominator (LCD):

1) $\frac{num}{2x^2y}; \frac{num}{5x^3}$ LCD: $10x^3y$

2) $\frac{num}{x-3}; \frac{num}{x+5}$ LCD: $(x-3)(x+5)$

3) $\frac{num}{2x-4}; \frac{num}{x^2-4}$ $2(x-2)$ $(x+2)(x-2)$ LCD: $2(x+2)(x-2)$

4) $\frac{num}{x+3}; \frac{num}{x^2-5x-24}$ $(x-8)(x+3)$ LCD: $(x-8)(x+3)$

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Notes
Steps for adding and subtracting rationals w/unlike denominators

Step 1: If subtraction, distribute the negative.
Step 2: Find the least common denominator (LCD).
Step 3: Multiply both the numerator and denominator by the missing term in the LCD.
Step 4: Combine like terms in the numerators.
Step 5: Factor and simplify, if possible.

Examples

Add or Subtract

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

$\frac{9x}{3x(x-3)}+\frac{2x-6}{3x(x-3)}$

$\frac{9x+2x-6}{3x(x-3)}$

$\boxed{\frac{11x-6}{3x(x-3)}}$

2. $\frac{5}{x-2}-\frac{3}{x+2}$

$\frac{5x+10}{(x+2)(x-2)}-\frac{3x-6}{(x+2)(x-2)}$

$\frac{5x+10-(3x-6)}{(x+2)(x-2)}=\frac{5x+10-3x+6}{(x+2)(x-2)}$

$=\frac{2x+16}{(x+2)(x-2)}=\boxed{\frac{2(x+8)}{(x+2)(x-2)}}$

3. $\frac{5x}{2x-5}-\frac{25}{4x-1}$

$=\frac{20x^2-5x}{(4x-1)(2x-5)}-\frac{50x-125}{(4x-1)(2x-5)}$

$=\frac{20x^2-5x-50x+125}{(4x-1)(2x-5)}$

$=\frac{20x^2-55x+125}{(4x-1)(2x-5)}$

$=\frac{5(4x^2-11x+25)}{(4x-1)(2x-5)}$

4. $\frac{x-3}{2x+2}+\frac{4}{x^2+8x+7}$

$=\frac{(x-3)(x+7)}{2(x+1)(x+7)}+\frac{2\cdot 4}{2(x+7)(x+1)}$

$\frac{x^2+7x-3x-21}{2(x+1)(x+7)}+\frac{8}{2(x+1)(x+7)}$

$=\boxed{\frac{x^2+4x-13}{2(x+1)(x+7)}}$

M	A
100	-11
10,10	
25,4	
20,5	
50,2	
100,1	

Summary
Summarize the lesson in your own words