

WARMUP

Divide the following: Hint, write using one ÷ symbol.

1) $\frac{8x^2y}{x+1} \div \frac{6xy^5}{x+1}$
 $\frac{8x^2y}{x+1} \cdot \frac{x+1}{6xy^5} = \frac{4x}{3y^4}$

2) Add. $\frac{2x}{3x^2-75} + \frac{10}{3x^2-75}$
 $\frac{2(x+5)}{3(x+5)(x-5)} + \frac{2}{3(x-5)}$

3) Subtract. $\frac{8}{x-8} - \frac{x}{x-8}$

$\frac{8-x}{x-8} = \frac{-x+8}{x-8} = \frac{-(x-8)}{x-8} = -1$

4) State the restrictions and simplify.

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

$x \neq -4$

5) Multiply.

$\frac{x^2+3x-28}{x+7} \cdot \frac{2x^2+7x+6}{x^2-16}$

$\frac{2x+8}{x+4} \cdot \frac{2(x+4)}{x+4}$

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

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

How would you find the LCD
(common denominator) of:

$$\frac{1}{9} \text{ and } \frac{2}{19}$$

9.5 Adding/Subtracting Rational Expressions

Examples:

$$\frac{3}{14} + \frac{2}{14}$$



Just like some simple fractions, when the denominators are the same, just add the numerators and then simplify by **FACTORING** if necessary.

$$\frac{2}{3} + \frac{1}{6}$$

But what do you have to do when the denominators are not the same?



1) $\frac{8y+2}{x^2y} + \frac{4x-6}{2xy}$ Denominators are MONOMIALS, notice, there are NO + or - !

① Factor (denominators)

② Common denom.

$$\frac{16y+4}{2x^2y} + \frac{4x^2-6x}{2x^2y}$$

③ Add

$$\frac{4x^2-6x+4+16y}{2x^2y}$$

④ Cancel

$$\frac{\cancel{2}(2x^2-3x+2+8y)}{\cancel{2}x^2y}$$

$$2) \frac{-5x}{x^2 - 25} + \frac{4}{2x - 10}$$

Denominators are BINOMIALS, so they need to be FACTORED to figure out LCD.

① Factor

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

② C.D.

$$\frac{-10x}{2(x-5)(x+5)} + \frac{4x+20}{2(x-5)(x+5)}$$

③ Add

$$-6x + 20 = 2(-3x + 10)$$

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

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

Do you have to factor the denominator(s)?
Is there a + or - sign????

① Factor

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

② c.p.

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

$-6x^2 + 54$

$$\frac{-4x^2 + 54}{x^2(x-3)(x+3)}$$

$$4) \frac{1}{x^2 - 4x - 12} + \frac{3x}{4x + 8}$$

Do you have to factor the denominator(s) to get LCD?



HOMEWORK 9.5

Workbook Pg 71 #1-4, 6, 7, 9, 12, 14,
15, 17, 19, 20, 22, 23, 31