

# Complex Fractions Involving Expressions

I. Looks like:

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

A. Just Division!

B. Step 1: write as division

C. Step 2: flip bottom fraction

D. Step 3: Multiply to each top fraction  
(Distribute)

E. STEP 4: Add (need common denominator)

F. STEP 5: Simplify.

II. Solving 'em...

$$\text{ex. } \frac{\frac{x+1}{3} + \frac{2}{x-4}}{\frac{x+1}{x-4}}$$

$$\textcircled{1} \left( \frac{x+1}{3} + \frac{2}{x-4} \right) \div \frac{x+1}{x-4}$$

$$\textcircled{2} \left( \frac{x-1}{3} + \frac{2}{x-4} \right) \cdot \frac{x-4}{x+1}$$

$$\textcircled{3} \left( \frac{\cancel{x+1}}{3} \right) \left( \frac{x-4}{\cancel{x-1}} \right) + \left( \frac{2}{\cancel{x-4}} \right) \left( \frac{\cancel{x-4}}{x+1} \right)$$

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

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

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

check  
factors

$$(x-2)(x-1)$$

won't cancel