new denom

Algebra 2 8.2
Determine the LCM of polynomials
Add and subtract rational expressions

LCM
denominator
numerator
complex fraction
whiteboards?

What denominator will work? (LCM)
What do I need? (FFOO)
Combine terms (EWE, whatever)
Simplify

28. $\frac{3a^2}{16b^2} + \frac{-8x}{5a^3b}$ $\cdot \frac{16b}{16b}$ $\frac{15a^5}{80b^2a^3} + \frac{-128bx}{80b^2a^3}$

$= \frac{15a^5 + -128by}{80b^2a^3}$

3B. $\frac{3}{4x^2+21x+5} + \frac{6}{12x+3}$

$3 \quad (4x+1)(x+5) \qquad 3(4x+1) \qquad x+5 \quad x+5$

$= \frac{3(x-8)}{3(4x+1)(x+5)} + \frac{6(x+5)}{3(4x+1)(x+5)}$

Factor first!

$20 \quad 1\ 20$

$(4x^2+20x+x+5)$

$4x(x+5)+1(x+5)$

$\frac{3x-24+6x+30}{3(4x+1)(x+5)}$

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

$\frac{9x+6}{3(4x+1)(x+5)}$

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

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

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

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

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

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

GuidedPractice

Simplify each expression.

3A. $\frac{x-1}{x^2-x-6} + \frac{-4}{5x+10}$

Subtraction: be careful

$(x-1)\cdot(x-3)$

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

$5x-5-4x+12 \quad \frac{x+7}{5(x-3)(x+2)}$

24. $\dfrac{\left(\dfrac{r+6}{r}+\dfrac{-1}{r+2}\right)\cdot\dfrac{r(r+2)}{r(r+2)}}{\left(\dfrac{r^2+4r+3}{r^2+2r}\right)}$

$\dfrac{(r+2)(r+6)}{r(r+2)}+\dfrac{-r}{r(r+2)}$

$r^2+8r+12-r$

$\dfrac{r^2+7r+12}{r(r+2)}\cdot\dfrac{r^2+2r}{r^2+4r+3}$

$\dfrac{(r+4)(r+3)}{r(r+2)}\cdot\dfrac{r(r+2)}{(r+1)(r+3)}$

$\dfrac{r+4}{r+1}$

GuidedPractice

Simplify each expression.

4A. $\dfrac{1-\frac{y}{x}}{\frac{1}{y}+\frac{1}{x}}$

$\dfrac{\left(\frac{x-y}{x}\right)}{\left(\frac{x+y}{xy}\right)} \cdot \dfrac{xy}{x+y}$

$\dfrac{y(x-y)}{x+y} \quad \dfrac{xy-y^2}{x+y}$

$$\frac{5y^2 \cdot 5}{5y^2 \cdot 12x^4y} + \frac{-1 \cdot 12x^2}{5x^2y^3 \cdot 12x^2} \quad \frac{25y^2}{60x^4y^3} + \frac{-12x^2}{60x^4y^3}$$

$$\frac{1}{(a+3)} + \frac{1}{(a+5)} \qquad \frac{25y^2 + -12x^2}{60x^4y^3}$$

$$\frac{a+5+a+3}{(a+3)(a+5)} = \frac{2a+8}{(a+3)(a+5)}$$

4B. $\dfrac{\frac{c}{d} - \frac{d}{c}}{\frac{d}{c} + 2}$