Sec 9-5: Adding and Subtracting Rational Expressions

Simplify. $\dfrac{5}{x^2+4x-21} + \dfrac{2}{x^2+10x+24}$

$\dfrac{5}{(x+7)(x-3)} + \dfrac{2}{(x+4)(x+6)}$

Instead of multiplying by the denominators in factored form

$\dfrac{(x+4)(x+6)}{(x+4)(x+6)} \cdot \dfrac{5}{x^2+4x-21} + \dfrac{2}{x^2+10x+24} \cdot \dfrac{(x+7)(x-3)}{(x+7)(x-3)}$

It might be easier to just use their expanded form

$\dfrac{(x^2+10x+24)}{x^2+10x+24} \cdot \dfrac{5}{x^2+4x-21} + \dfrac{2}{x^2+10x+24} \cdot \dfrac{(x^2+4x-21)}{x^2+4x-21}$

$$\frac{5x^2+50x+120 + 2x^2+8x-42}{(x^2+10x+24)(x^2+4x-21)}$$

$$= \frac{7x^2+58x+78}{(x^2+10x+24)(x^2+4x-21)}$$

← Your denominator could be the for separate factor instead: (x+7)(x-3)(x+4)(x+6)

Simplify. $\dfrac{x}{x^2+12x+36} + \dfrac{4}{x^2-x-42}$

$\dfrac{x}{x^2+12x+36} + \dfrac{4}{x^2-x-42}$

$\dfrac{x}{(x+6)(x+6)} \quad \dfrac{4}{(x+6)(x-7)}$

$$\frac{(x-7)}{(x-7)} \cdot \frac{x}{(x+6)(x+6)} + \frac{4}{(x+6)(x-7)} \cdot \frac{(x+6)}{(x+6)}$$

$$= \frac{x^2-7x+4x+24}{(x+6)^2(x-7)} = \frac{x^2-3x+24}{(x+6)^2(x-7)}$$

Simplify. $\dfrac{3}{4x^3-16x^2-20x} + \dfrac{7}{6x^2-150}$

$\dfrac{3}{4x^3-16x^2-20x} + \dfrac{7}{6x^2-150}$

$4x(x^2-4x-5) \quad 6(x^2-25)$

$$\frac{9(x+5)}{3(x+5)(4x(x-5)(x+1)} + \frac{+14x(x+1)}{6(x+5)(x-5)} \cdot \frac{2x(x+1)}{2x(x+1)}$$

$$= \frac{9x+45 + 14x^2+14x}{12x(x+5)(x+1)}$$

$$= \frac{14x^2+23x+45}{12x(x+5)(x+1)}$$

Simplify. $\dfrac{8}{x-3} - \dfrac{4}{x^2+2x-15} + \dfrac{3}{x+5}$

$$\frac{(x+5)}{(x+5)} \cdot \frac{8}{x-3} - \frac{4}{x^2+2x-15} + \frac{3}{x+5} \cdot \frac{(x-3)}{(x-3)}$$

$(x+5)(x-3)$

$$\frac{8x+40 - 4 + 3x-9}{(x+5)(x-3)} = \frac{11x+27}{(x+5)(x-3)}$$

Hwk #8 Sec 9-5

Page 517

Problems 12, 14, 15, 21, 34, 37, 40

You must show work to get credit