Sect 8.2 Adding & Subtracting Rational Expressions

What is needed to add or subtract fractions? common denominator

$\frac{8\cdot 1}{8\cdot 5} + \frac{3\cdot 5}{8\cdot 5}$ LCD: 40

$\frac{8}{40} + \frac{15}{40} = \boxed{\frac{23}{40}}$

$\frac{2y\cdot 3}{2y\cdot 15x^2} + \frac{x\cdot 5x}{6xy\cdot 5x}$ LCD: $30x^2y$

$\frac{6y}{30x^2y} + \frac{5x^2}{30x^2y} = \boxed{\frac{6y+5x^2}{30x^2y}}$

What is the Least Common Multiple of each set of polynomials?

EX1) $18r^2s^5$, $15s^3t$

18, 36, 54, 72, 90

LCM $= \boxed{90r^2s^5t}$

EX2) $(x^2 - 4)$, $(3x + 6)$

$(x+2)(x-2)$, $3(x+2)$

LCM $= \boxed{3(x+2)(x-2)}$

Your turn!!

1) $12a^2b^4$, $18a^5b^2c$

18, 36

LCM $= \boxed{36a^5b^4c}$

2) $6m^3n^5$, $8mnp^2$, $36m^3n^4p$

LCM $= \boxed{72m^3n^5p^2}$

Let's work with fractions!!

We will be simplifying 2 types of problems…

1) Monomial Denominators Directions: Simplify.

a.) $\frac{6}{ab} + \frac{8\cdot b}{a\cdot b}$

$\frac{6}{ab} + \frac{8b}{ab} = \boxed{\frac{6+8b}{ab}}$

$= \boxed{\frac{2(3+4b)}{ab}}$

b.) $\frac{6x\cdot 7x}{6x\cdot 15y^2} + \frac{y\cdot 5y}{18xy\cdot 5y}$

$\frac{42x^2}{90xy^2} + \frac{5y^2}{90xy^2} = \boxed{\frac{42x^2+5y^2}{90xy^2}}$

2) Polynomial Denominators

Simplify:

1. $\dfrac{16}{x^2-16}+\dfrac{2\,(x-4)}{(x+4)(x-4)}$

$(x+4)(x-4)$

$$\frac{16+2x-8}{(x+4)(x-4)}=\frac{2x+8}{(x+4)(x-4)}=\frac{2\cancel{(x+4)}}{\cancel{(x+4)}(x-4)}=\boxed{\frac{2}{x-4}}$$

2. $\dfrac{w+12}{4w-16}-\dfrac{(w+4)\cdot 2}{2w-8}$

$2w+8$

$4(w-4)$ $\quad 2(w-4)\cdot 2$

$$\frac{w+12-2w-8}{4(w-4)}=\frac{-1w+4}{4(w-4)}=\frac{-1\cancel{(w-4)}}{4\cancel{(w-4)}}=\boxed{\frac{-1}{4}}$$

3. ~~$\dfrac{3}{3-w}-\dfrac{2}{w^2-9}$~~

4. $\dfrac{5}{x^2+3x-28}+\dfrac{7}{2x+14}$

Your turn☺ Simplify:

1. $\dfrac{4m}{3mn}+2$

2. $\dfrac{4}{a-3}+\dfrac{9}{a-5}$

3. $\dfrac{(x+4)\,2}{(x+4)(x-4)}-\dfrac{x+12}{x^2-16}$

$(x+4)(x-4)$

$$\frac{2x+8-x-12}{(x+4)(x-4)}=\frac{\cancel{x-4}}{(x+4)\cancel{(x-4)}}=\boxed{\frac{1}{x+4}}$$