9-2 Adding and Subtracting Rational Expressions

Objective: Determine the LCM of Polynomials
Add and Subtract rational expressions

I. **LCM**--**Least Common Multiple**--use each factor the greatest number of times it appears as a factor and simplify.

Ex 1) 9, 18, 27, 36, 45, 54, 63

15, 30, 45 LCM = 45

Ex 2) a^2b^3 :

a^4b :

$LCM = a^4b^3$

Ex 3) $18r^2s^5t^0$

$24r^3st^2$

$15s^3t$

$LCM: 360r^3s^5t^2$

Ex 4) $p^3 + 5p^2 + 6p$: $p(p^2+5p+6)$

p^2+6p+9 : $p(p+3)(p+2)$

$(p+3)(p+3)$

$LCM: p(p+3)(p+3)(p+2)$

II. **Simplify**

Ex 5) $\frac{5a^2}{6b} + \frac{9}{14a^2b^2}$ $= \frac{35a^4b}{42a^2b^2} + \frac{27}{42a^2b^2} = \frac{35a^4b+27}{42a^2b^2}$

Ex 6) $\frac{w+12}{4w-16} - \frac{2(w+4)}{2w-8}$ $= \frac{w+12}{4(w-4)} - \frac{2(w+4)}{2(w-4)}$

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

Ex 7) $\frac{x+10}{3x-15} - \frac{3x+15}{6x-30}$ $= \frac{2x+20}{6(x-5)} - \frac{3x+15}{6(x-5)}$

$= \frac{2x+20+(-3x-15)}{6(x-5)} = \frac{-x+5}{6(x-5)} = \frac{-1}{6}$

(22) $\frac{6}{ab} + \frac{8}{a} = \frac{6+8b}{ab}$

(24) $\frac{5}{r} + \frac{7}{1} = \frac{5+7r}{r}$

(26) $\frac{3x}{4y^2} - \frac{y^2}{6x} = \frac{9x^2}{12xy^2} - \frac{2y^3}{12xy^2} = \frac{9x^2-2y^3}{12xy^2}$

(28) $\frac{3}{4q} - \frac{4}{5q} - \frac{1}{2q}$ $= \frac{15}{20q} - \frac{8}{20q} - \frac{10}{20q}$

$= \frac{-3}{20q}$