Adding and Subtracting Rational Expressions

In order to add or subtract fractions, we must first find the least common Denominator or LCD.

a) $\frac{1}{3}+\frac{3}{4}=\frac{4}{12}+\frac{9}{12}=\boxed{\frac{13}{12}}$

b) $\frac{5}{2}-\frac{3}{4}=\frac{10}{4}-\frac{3}{4}=\frac{7}{4}$

Monomial Denominators-FIND A COMMON DENOMINATOR!

- determine what each denominator has that the other denominator is missing
- multiply top and bottom by whatever is missing-to give you the common denominator

Example 1: $\frac{1}{2x}+\frac{1}{2x}=\frac{2}{2x}=\frac{1}{x}$

Example 2: $\frac{-2}{x}-\frac{1}{x}=\frac{-3}{x}$

Example 3: $\frac{1}{6x}+\frac{2}{3x}-\frac{3}{4x}$

$\frac{2}{12x}+\frac{8}{12x}-\frac{9}{12x}=\frac{1}{12x}$

Example 4: $\frac{5y+2}{xy^2}+\frac{2x-4}{4xy}$

$\frac{4(5y+2)}{4xy^2}+\frac{y(2x-4)}{4xy^2}=\frac{20y+8+2xy-4y}{4xy^2}=\frac{16y+8+2xy}{4xy^2}$

Example 5: $\frac{3}{7x^2y}+\frac{4}{21xy^2}$ (3y, 3y)

$\frac{9y}{21x^2y^2}+\frac{4x}{21x^2y^2}=\boxed{\frac{9y+4x}{21x^2y^2}}$

Example 6: $\frac{3}{8x^3y^3}-\frac{1}{4xy}\cdot\frac{(2x^2y^2)}{2x^2y^2}$

$\frac{3}{8x^3y^3}-\frac{2x^2y^2}{8x^3y^3}=\frac{3-2x^2y^2}{8x^3y^3}$

$\frac{8y+4+xy}{2xy^2}$