6.3 Adding & Subtracting Rational Expressions Part 1

When adding or subtracting fractions or rational expressions, we need a common denominator.

Recall Fractions:

$$\frac{2}{3}+\frac{5}{3}=\frac{2+5}{3}=\frac{7}{3}$$

$$\frac{3}{4}+\frac{2}{3}=\frac{3\cdot3}{4\cdot3}+\frac{2\cdot4}{3\cdot4}=\frac{9}{12}+\frac{8}{12}=\frac{9+8}{12}=\frac{17}{12}$$

Example: Adding or Subtracting Rational Expressions

a) $\frac{2a}{c}-\frac{a-1}{c}=\frac{2a-1(a-1)}{c}$

npv: $c\neq0$

$=\frac{2a-1a+1}{c}$

$=\boxed{\frac{a+1}{c}}$

b) $\frac{2x}{x+4}+\frac{8}{x+4}$

Steps:
1) re-write as one rational expression
2) state npv
3) factor where possible & try to cancel factors
4) add/subtract numerators where possible.

c) $\frac{x^2}{x-2}+\frac{3x}{x-2}-\frac{10}{x-2}=\frac{x^2+3x-10}{x-2}$

factor this trinomial! $\_+\_=3$, $\_\times\_=-10$

npv: $x-2\neq0$, $+2\ +2$, $x\neq2$

$=\frac{(x+5)(x-2)}{x-2}$

$=\boxed{x+5}$

d) $\frac{2x}{xy}+\frac{4}{x^2}$ create a common denominator

$=\frac{2x\cdot x}{xy\cdot x}+\frac{4}{x^2}\cdot\frac{y}{y}$

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

$=\boxed{\frac{2(x^2+2y)}{x^2y}}$

nothing cancels so final answer.

Practice: p 336 # 1cde, 3a, 5bcd