Warm-up:

1) $\frac{3}{4} - \frac{1}{4} = \frac{2}{4} = \boxed{\frac{1}{2}}$

2) $\frac{2}{2} \cdot \frac{2}{5} + \frac{1}{10} = \frac{4}{10} + \frac{1}{10} = \frac{5}{10} = \boxed{\frac{1}{2}}$

3) $\frac{3}{3} \cdot \frac{3}{10} + \frac{1}{6} \cdot \frac{5}{5} = \frac{9}{30} + \frac{5}{30} = \frac{14}{30} = \boxed{\frac{7}{15}}$

ADD AND SUBTRACT RATIONAL EXPRESSIONS

HOW DO I ADD AND SUBTRACT RATIONAL EXPRESSIONS?

Steps:

D
1. Factor Denominator
2. Get a Common Denominator (LCD)

N
3. Add/Sub Numerator } multiply, combine terms, factor
4. Re-write Denominator

S
5. Simplify your answer

LAST step ONLY!

EX. ADD OR SUBTRACT.

- 1. $\frac{5}{6x^2}+\frac{x}{4x^2-12x}$

LCD: $12x^2(x-3)$

D

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

$12x^2(x-3)$ $\qquad$ $12x^2(x-3)$

N

$\frac{10(x-3)+3x^2}{LCD}=\frac{10x-30+3x^2}{LCD}$

$=\frac{3x^2+10x-30}{LCD}=\frac{(\quad)(\quad)}{LCD}$

S

$\frac{3x^2+10x-30}{12x^2(x-3)}$

EX. ADD OR SUBTRACT.

- 2. $\frac{x^2+3x-6}{(x^2-2x-3)}-\frac{3}{(x-3)}$

LCD: $(x-3)(x+1)$

D

$\frac{x^2+3x-6}{(x-3)(x+1)}-\frac{3(x+1)}{(x-3)(x+1)}$

N

$\frac{x^2+3x-6-3(x+1)}{LCD}=\frac{x^2+3x-6-3x-3}{LCD}$

$=\frac{x^2-9}{LCD}=\frac{(x+3)(x-3)}{LCD}$

S

$\frac{(x+3)(x-3)}{(x-3)(x+1)}=\frac{x+3}{x+1}$

EX. ADD OR SUBTRACT.

- 3. $\dfrac{x+18}{x^2-3x}+\dfrac{x+4}{3-x}$

LCD: $x(x-3)$

D

$$\frac{x+18}{x(x-3)} - \frac{x(x+4)}{(3-x)\,x(x-3)}$$

N

$$\frac{x+18-x(x+4)}{LCD} = \frac{x+18-x^2-4x}{LCD} = \frac{-x^2-3x+18}{LCD}$$

$$= \frac{-(x^2+3x-18)}{LCD} = \frac{-(x+6)(x-3)}{LCD}$$

S

$$\frac{-(x+6)(x-3)}{x(x-3)} = \boxed{\frac{-(x+6)}{x}} \text{ OR } \boxed{\frac{-x-6}{x}}$$

EX. ADD OR SUBTRACT.

- 4. $\dfrac{10x}{3x^2-3}+\dfrac{4}{x-1}+\dfrac{5}{6x}$

LCD: $6x(x+1)(x-1)$

D

$$\frac{2x\cdot 10x}{2x\cdot 3(x^2-1)} + \frac{6x\cdot 4(x+1)}{6x(x-1)(x+1)} + \frac{5(x^2-1)}{6x(x^2-1)}$$

$(x+1)(x-1)$

N

$$\frac{20x^2+24x(x+1)+5(x^2-1)}{LCD} = \frac{20x^2+24x^2+24x+5x^2-5}{LCD}$$

S

$$\boxed{\frac{49x^2+24x-5}{6x(x+1)(x-1)}}$$

this cannot factor!

it's ok to multiply denominator, but Why bother?!