

RAPPEL : Les règles numériques sont les mêmes avec des écritures littérales : $\frac{1}{5} + \frac{2}{5} = \frac{3}{5}$

EXERCICE 2B.1

Simplifier les écritures suivantes :

| | | |
|-----------------------|------------------------|------------------------|
| $\frac{1}{x+1} + 3 =$ | $\frac{1}{2x+3} + 5 =$ | $\frac{1}{3x-2} + 4 =$ |
| $\frac{1}{x+3} - 2 =$ | $\frac{2}{3x-5} - 7 =$ | $\frac{3}{4-7x} - 5 =$ |

EXERCICE 2B.2

Simplifier les écritures suivantes :

| | | |
|---|---|--------------------------------------|
| $\frac{1}{x+1} + \frac{1}{x+2} =$ | $\frac{3}{x+2} + \frac{2}{x+3} =$ | $\frac{4}{2x-5} + \frac{3}{5x+8} =$ |
| $\frac{1}{x+5} - \frac{1}{x+3} =$ | $\frac{7}{3x+2} - \frac{4}{2x+5} =$ | $\frac{-2}{4-3x} - \frac{4}{2-6x} =$ |
| $\frac{3x+5}{x+7} + \frac{4x-2}{x-3} =$ | $\frac{8x-3}{2x-3} - \frac{9-2x}{5-3x} + \frac{3}{2} =$ | |

CORRIGE – NOTRE DAME DE LA MERCI – 

EXERCICE 2B.1 Simplifier les écritures suivantes

$$\begin{aligned} \frac{1}{x+1} + 3 &= \frac{1}{x+1} + \frac{3}{1} \\ &= \frac{1}{x+1} + \frac{3(x+1)}{1(x+1)} \\ &= \frac{1}{x+1} + \frac{3x+3}{x+1} \\ &= \frac{1+3x+3}{x+1} \\ &= \frac{3x+4}{x+1} \end{aligned}$$

$$\begin{aligned} \frac{1}{2x+3} + 5 &= \frac{1}{2x+3} + \frac{5}{1} \\ &= \frac{1}{2x+3} + \frac{5(2x+3)}{1(2x+3)} \\ &= \frac{1}{2x+3} + \frac{10x+15}{2x+3} \\ &= \frac{1+10x+15}{2x+3} \\ &= \frac{10x+16}{2x+3} \end{aligned}$$

$$\begin{aligned} \frac{1}{3x-2} + 4 &= \frac{1}{3x-2} + \frac{4}{1} \\ &= \frac{1}{3x-2} + \frac{4(3x-2)}{1(3x-2)} \\ &= \frac{1}{3x-2} + \frac{12x-8}{3x-2} \\ &= \frac{1+12x-8}{3x-2} \\ &= \frac{12x-7}{3x-2} \end{aligned}$$

$$\begin{aligned} \frac{1}{x+3} - 2 &= \frac{1}{x+3} - \frac{2}{1} \\ &= \frac{1}{x+3} - \frac{2(x+3)}{1(x+3)} \\ &= \frac{1}{x+3} - \frac{2x+6}{x+3} \\ &= \frac{1-(2x+6)}{x+3} \\ &= \frac{1-2x-6}{x+3} \\ &= \frac{-2x-5}{x+3} \end{aligned}$$

$$\begin{aligned} \frac{2}{3x-5} - 7 &= \frac{2}{3x-5} - \frac{7}{1} \\ &= \frac{2}{3x-5} - \frac{7(3x-5)}{1(3x-5)} \\ &= \frac{2}{3x-5} - \frac{21x-35}{3x-5} \\ &= \frac{2-(21x-35)}{3x-5} \\ &= \frac{2-21x+35}{3x-5} \\ &= \frac{-21x+37}{3x-5} \end{aligned}$$

$$\begin{aligned} \frac{3}{4-7x} - 5 &= \frac{3}{4-7x} - \frac{5}{1} \\ &= \frac{3}{4-7x} - \frac{5(4-7x)}{1(4-7x)} \\ &= \frac{3}{4-7x} - \frac{20-35x}{4-7x} \\ &= \frac{3-(20-35x)}{4-7x} \\ &= \frac{3-20+35x}{4-7x} \\ &= \frac{35x-17}{4-7x} \end{aligned}$$

EXERCICE 2B.2 Simplifier les écritures suivantes :

$$\begin{aligned} \frac{1}{x+1} + \frac{1}{x+2} &= \frac{1(x+2)}{(x+1)(x+2)} + \frac{1(x+1)}{(x+2)(x+1)} \\ &= \frac{x+2}{(x+1)(x+2)} + \frac{x+1}{(x+2)(x+1)} \\ &= \frac{x+2+(x+1)}{(x+1)(x+2)} \\ &= \frac{x+2+x+1}{(x+1)(x+2)} \\ &= \frac{2x+3}{(x+1)(x+2)} \end{aligned}$$

$$\begin{aligned} \frac{3}{x+2} + \frac{2}{x+3} &= \frac{3(x+3)}{(x+2)(x+3)} + \frac{2(x+2)}{(x+3)(x+2)} \\ &= \frac{3x+9}{(x+2)(x+3)} + \frac{2x+4}{(x+3)(x+2)} \\ &= \frac{3x+9+(2x+4)}{(x+2)(x+3)} \\ &= \frac{3x+9+2x+4}{(x+2)(x+3)} \\ &= \frac{5x+13}{(x+2)(x+3)} \end{aligned}$$

$$\begin{aligned} \frac{4}{2x-5} + \frac{3}{5x+8} &= \frac{4(5x+8)}{(2x-5)(5x+8)} + \frac{3(2x-5)}{(5x+8)(2x-5)} \\ &= \frac{20x+32}{(2x-5)(5x+8)} + \frac{6x-15}{(5x+8)(2x-5)} \\ &= \frac{20x+32+(6x-15)}{(2x-5)(5x+8)} \\ &= \frac{20x+32+6x-15}{(2x-5)(5x+8)} \\ &= \frac{26x+17}{(2x-5)(5x+8)} \end{aligned}$$

$$\begin{aligned} \frac{1}{x+5} - \frac{1}{x+3} &= \frac{1(x+3)}{(x+5)(x+3)} - \frac{1(x+5)}{(x+3)(x+5)} \\ &= \frac{x+3}{(x+5)(x+3)} - \frac{x+5}{(x+3)(x+5)} \\ &= \frac{x+3-(x+5)}{(x+5)(x+3)} \\ &= \frac{x+3-x-5}{(x+5)(x+3)} \\ &= \frac{-2}{(x+5)(x+3)} \end{aligned}$$

$$\begin{aligned} \frac{7}{3x+2} - \frac{4}{2x+5} &= \frac{7(2x+5)}{(3x+2)(2x+5)} - \frac{4(3x+2)}{(2x+5)(3x+2)} \\ &= \frac{14x+35}{(3x+2)(2x+5)} - \frac{12x+8}{(2x+5)(3x+2)} \\ &= \frac{14x+35-(12x+8)}{(3x+2)(2x+5)} \\ &= \frac{14x+35-12x-8}{(3x+2)(2x+5)} \\ &= \frac{2x+27}{(3x+2)(2x+5)} \end{aligned}$$

$$\begin{aligned} \frac{-2}{4-3x} - \frac{4}{2-6x} &= \frac{-2(2-6x)}{(4-3x)(2-6x)} - \frac{4(4-3x)}{(2-6x)(4-3x)} \\ &= \frac{-4+12x}{(4-3x)(2-6x)} - \frac{16-12x}{(2-6x)(4-3x)} \\ &= \frac{-4+12x-(16-12x)}{(4-3x)(2-6x)} \\ &= \frac{-4+12x-16+12x}{(4-3x)(2-6x)} \\ &= \frac{24x-20}{(4-3x)(2-6x)} = \frac{12x-10}{(4-3x)(1-3x)} \end{aligned}$$

$$\begin{aligned} \frac{3x+5}{x+7} + \frac{4x-2}{x-3} &= \frac{(3x+5)(x-3)}{(x+7)(x-3)} + \frac{(4x-2)(x+7)}{(x-3)(x+7)} \\ &= \frac{3x^2-9x+5x-15}{(x+7)(x-3)} + \frac{4x^2+28x-2x-14}{(x-3)(x+7)} \\ &= \frac{3x^2-4x-15}{(x+7)(x-3)} + \frac{4x^2+26x-14}{(x-3)(x+7)} \\ &= \frac{(3x^2-4x-15)+(4x^2+26x-14)}{(x+7)(x-3)} \\ &= \frac{3x^2-4x-15+4x^2+26x-14}{(x+7)(x-3)} \\ &= \frac{7x^2+22x-29}{(x+7)(x-3)} \end{aligned}$$

$$\begin{aligned}
\frac{8x-3}{2x-3} - \frac{9-2x}{5-3x} + \frac{3}{2} &= \frac{(8x-3)(5-3x) \times 2}{(2x-3)(5-3x) \times 2} - \frac{(9-2x)(2x-3) \times 2}{(5-3x)(2x-3) \times 2} + \frac{3(2x-3)(5-3x)}{2(2x-3)(5-3x)} \\
&= \frac{(40x-24x^2-15+9x) \times 2}{(2x-3)(5-3x) \times 2} - \frac{(18x-27-4x^2+6x) \times 2}{(5-3x)(2x-3) \times 2} + \frac{3(10x-6x^2-15+9x)}{2(2x-3)(5-3x)} \\
&= \frac{80x-48x^2-30+18x}{(2x-3)(5-3x) \times 2} - \frac{36x-54-8x^2+12x}{(5-3x)(2x-3) \times 2} + \frac{30x-18x^2-45+27x}{2(2x-3)(5-3x)} \\
&= \frac{-48x^2+98x-30}{(2x-3)(5-3x) \times 2} - \frac{-8x^2+48x-54}{(5-3x)(2x-3) \times 2} + \frac{-18x^2+57x-45}{2(2x-3)(5-3x)} \\
&= \frac{(-48x^2+98x-30) - (-8x^2+48x-54) + (-18x^2+57x-45)}{2(2x-3)(5-3x)} \\
&= \frac{-48x^2+98x-30+8x^2-48x+54-18x^2+57x-45}{2(2x-3)(5-3x)} \\
&= \frac{-58x^2+107x-21}{2(2x-3)(5-3x)}
\end{aligned}$$