

Techniques de Calculs

① - Fractions

$$\bullet \quad \frac{a}{b} \times \frac{c}{d} = \frac{a \times c}{b \times d}$$

$$\bullet \quad \frac{1}{\frac{a}{b}} = \frac{b}{a}$$

$$\bullet \quad \frac{\frac{a}{b}}{\frac{c}{d}} = \frac{a}{b} \times \frac{d}{c}$$

$$\bullet \quad \frac{a}{b} \pm \frac{c}{b} = \frac{a \pm c}{b}$$

$$\bullet \quad \frac{a}{b} \pm \frac{c}{d} = \frac{a \times d \pm c \times b}{b \times d}$$

exercice:

$$\bullet \frac{1}{2} - \frac{1}{3} = \frac{1 \times 3 - 1 \times 2}{2 \times 3}$$

$$= \frac{3 - 2}{6}$$

$$= \frac{1}{6}$$

$$\bullet \frac{1}{7} - \frac{1}{5} = \frac{1 \times 5 - 1 \times 7}{7 \times 5}$$

$$= \frac{5 - 7}{35}$$

$$= \frac{-2}{35}.$$

$$\bullet \quad \frac{1}{3 \times 4} + \frac{1}{\underbrace{12}_{3 \times 4}} = \frac{4}{12} + \frac{1}{12}$$

$$= \frac{5}{12}$$

$$\bullet \quad \frac{1}{4} + \frac{1}{6} = \frac{6 + 4}{24} = \frac{10}{24}$$

$$= \frac{\cancel{2} \times 5}{\cancel{2} \times 12}$$

$$= \frac{5}{12}$$

$$\bullet \quad \frac{2}{\frac{5}{6}} = 2 \times \frac{6}{5} = \frac{12}{5}$$

$$\cdot \frac{\frac{5^3}{4}}{\frac{5^2}{5}} = \frac{3}{\cancel{5}} \times \frac{\cancel{5}}{4} = \frac{3}{4}$$

$$\cdot \frac{\frac{1}{2}}{\frac{6^5}{5}} = \frac{1}{4} \times \frac{6}{5}$$

$$= \frac{1 \times \cancel{2} \times 3}{\cancel{2} \times 2 \times 5} = \frac{3}{10}$$

$$\cdot \frac{x}{2} - \frac{x}{3} = \frac{x \times 3 - x \times 2}{6}$$

$$= \frac{3x - 2x}{6}$$

$$= \frac{x}{6}$$

$$\cdot \frac{1}{x-1} + \frac{1}{x+2}$$

$$= \frac{1 \times (x+2) + 1 \times (x-1)}{(x-1)(x+2)}$$

$$= \frac{x+2 + x-1}{(x-1)(x+2)}$$

$$= \frac{2x+1}{(x-1)(x+2)} \cdot$$

$$\bullet \quad \frac{10}{x} - \frac{7}{2x}$$

$$= \frac{10 \times 2x - 7 \times x}{2 \times 2x}$$

$$= \frac{20x - 7x}{2x^2}$$

$$= \frac{13x}{2x^2} \rightarrow x \times x$$

$$= \frac{13}{2x}$$

$$\bullet \frac{1+x}{2-x} + \frac{5}{2-x}$$

$$= \frac{1+x+5}{2-x}$$

$$= \frac{6+x}{2-x}$$

$$\bullet \frac{1+x}{2-x} + \frac{1}{1-x}$$

$$(a-b)(a+b) = a^2 - b^2$$

$$= \frac{(1-x)(1+x) + 1x(2-x)}{(2-x)(1-x)}$$

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

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

② - Calcular Fiteria

• $a(b+c) = a \times b + a \times c$



• $(a+b)(c+d) = a \times c + a \times d + b \times c + b \times d$



exercice:

$$\bullet \quad 5(x+2) = 5 \times x + 5 \times 2$$
$$= 5x + 10$$

$$\bullet \quad \frac{b}{3}(x+3) = \frac{b}{3} \times x + \cancel{\frac{b}{3} \times 3}$$
$$= \frac{bx}{3} + b$$

$$\bullet \quad (y+3)(x+1)$$
$$= y \times x + y \times 1 + 3 \times x + 3 \times 1$$
$$= yx + y + 3x + 3$$

Identities remarquables:

$$(a+b)^2 = a^2 + 2ab + b^2$$

$$(a-b)^2 = a^2 - 2ab + b^2$$

$$(a-b)(a+b) = a^2 - b^2$$

$$\bullet (10x+1)^2 = (10x)^2 + 2 \times 10x \times 1 + 1^2$$

$$= 10^2 x^2 + 20x + 1$$

$$= 100x^2 + 20x + 1.$$

$$\bullet \frac{1}{5} (5y-3)^2 = \frac{1}{5} \left[(5y)^2 - 2 \times 5y \times 3 + 3^2 \right]$$

$$= \frac{1}{5} [25y^2 - 30y + 9]$$

$$= \overset{5 \times 5}{\frac{25}{5}} y^2 - \overset{5 \times 6}{\frac{30}{5}} y + \frac{9}{5}$$

$$= 5y^2 - 6y + \frac{9}{5}.$$

$$\cdot (y-1)(x+1)(x-1).$$

$$= (y-1)(x^2-1)$$

$$= y \times x^2 + y \times (-1) + (-1) \times x^2 + (-1) \times (-1)$$

$$= yx^2 - y - x^2 + 1.$$

$$(-3)^2 = -3 \times -3 = 9$$

$$-(3)^2 = -3^2 = -9$$

$$\hookrightarrow f(x) = -x^2$$

$$f(-3) = -(-3)^2 = -9.$$

$$\bullet (y-1)(x+1)^2$$

$$= (y-1)(x^2 + 2x + 1)$$

$$= yx^2 + 2xy + y - x^2 - 2x - 1.$$

$$\begin{aligned}
 & \cdot (a+b)^3 = (a+b)(a+b)^2 \\
 & \quad = (a+b)(a^2 + 2ab + b^2) \\
 & \quad = a^3 + 2a^2b + ab^2 + ba^2 \\
 & \quad \quad + 2b^2a + b^3.
 \end{aligned}$$

$$\begin{aligned}
 & \cdot (x+5)(x-1) \\
 & = x^2 - x + 5x - 5 \\
 & = x^2 + 4x - 5
 \end{aligned}$$

A Faire

- degré 4
 - inéquation degré 2
 - Équation degré 2
 - exercice 8 et 9
↳ degré 3 et 4
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- développer
- fractions.