

Correction de l'interrogation écrite n°1

Exercice 1.

$$a = \frac{1}{3} - \frac{1}{4} = \frac{4}{12} - \frac{3}{12} \text{ soit } \boxed{a = \frac{1}{12}}.$$

$$b = \left(\frac{5}{2} - \frac{2}{5}\right) \times \frac{5}{3} = \left(\frac{25}{10} - \frac{4}{10}\right) \times \frac{5}{3} = \frac{21}{10} \times \frac{5}{3} = \frac{7 \times \cancel{3}}{2 \times \cancel{3}} \times \frac{\cancel{5}}{\cancel{3}} \text{ soit } \boxed{b = \frac{7}{2}}.$$

$$c = \frac{1 + \frac{1}{5}}{1 + \frac{1}{4}} = \frac{\frac{5}{4} + \frac{1}{5}}{\frac{4}{4} + \frac{1}{4}} = \frac{\frac{6}{5}}{\frac{5}{4}} = \frac{6}{5} \times \frac{4}{5} \text{ soit } \boxed{c = \frac{24}{25}}.$$

Exercice 2.

$$A = \sqrt{20} = \sqrt{4 \times 5} = \sqrt{4} \times \sqrt{5} \text{ donc } \boxed{A = 2\sqrt{5}}.$$

$$B = \sqrt{45} = \sqrt{9 \times 5} = \sqrt{9} \times \sqrt{5} \text{ donc } \boxed{B = 3\sqrt{5}}$$

$$C = \sqrt{80} + 3\sqrt{5} - 2\sqrt{180} = \sqrt{16 \times 5} + 3\sqrt{5} - 2\sqrt{36 \times 5} = \sqrt{16} \times \sqrt{5} + 3\sqrt{5} - 2\sqrt{36}\sqrt{5} \\ = 4\sqrt{5} + 3\sqrt{5} - 2 \times 6\sqrt{5} = 7\sqrt{5} - 12\sqrt{5}$$

$$\text{donc } \boxed{C = -5\sqrt{5}}.$$

Exercice 3.

$$A = (a^3b^{-2})^4 = a^{3 \times 4}b^{-2 \times 4} \text{ donc } \boxed{A = a^{12}b^{-8}}$$

$$B = a^2 \times \frac{b^2}{b^{-1}a} = a^2 \times b^2b^1a^{-1} = a^{2-1}b^{2+1} \text{ donc } \boxed{B = a^1b^3}$$

$$C = \frac{a^2b^4}{a^{-1}b^2} \times \left(\frac{a^3}{b}\right)^{-1} = a^2b^4a^1b^{-2} \times \frac{a^{-3}}{b^{-1}} = a^{2+1}b^{4-2}a^{-3}b^1 = a^{3-3}b^{2+1} \text{ donc } \boxed{C = a^0b^3}$$

Exercice 4.

$$A(x) = x(x+4) = x^2 + 4x$$

$$B(t) = (t+1)(3t-2) = 3t^2 - 2t + 3t - 2 = 3t^2 + t - 2$$

$$C(x) = (2x+1)^2 = (2x)^2 + 2 \times 2x \times 1 + 1^2 = 4x^2 + 4x + 1$$

$$D(y) = (2-y)(2+y) = 2^2 - y^2 = 4 - y^2$$

Exercice 5.

$$A(x) = 3(x+1) + (2x+5)(x+1) = (x+1)[3 + (2x+5)] \text{ donc } \boxed{A(x) = (x+1)(2x+8)}$$

$$\begin{aligned} B(t) &= (2-t)^2 + (2-t)(5t+1) = \underline{(2-t)(2-t)} + \underline{(2-t)(5t+1)} = \underline{(2-t)} [(2-t) + (5t+1)] \\ &= (2-t)(2-t+5t+1) \text{ donc } \boxed{B(t) = (2-t)(4t+3)} \end{aligned}$$

$$C(x) = x^2 + 6x + 9 = x^2 + 2 \times 3 \times x + 3^2 \text{ donc } \boxed{C(x) = (x+3)^2}$$

$$D(y) = 49 - 4y^2 = 7^2 - (2y)^2 \text{ donc } \boxed{D(y) = (7-2y)(7+2y)}$$

$$\begin{aligned} E(x) &= (2-x)(x+1) - (x-2)(3x+4) = \underline{(2-x)(x+1)} + \underline{(2-x)(3x+4)} \\ &= \underline{(2-x)} [(x+1) + (3x+4)] \text{ donc } \boxed{E(x) = (2-x)(4x+5)} \end{aligned}$$

$$\begin{aligned} F(x) &= x^2 - 1 + 2(x-1)^2 = \underline{(x-1)(x+1)} + \underline{2(x-1)(x-1)} \\ &= \underline{(x-1)} [(x+1) + 2(x-1)] \text{ donc } \boxed{F(x) = (x-1)(3x-1)} \end{aligned}$$

$$\begin{aligned} G(x) &= (2(x+1))^2 - (3(x-2))^2 - (2x-16)(3-2x) \\ &= [2(x+1) - 3(x-2)][2(x+1) + 3(x-2)] - (2x-16)(3-2x) \\ &= (2x+2-3x+6)(2x+2+3x-6) - (2x-16)(3-2x) \\ &= (-x+8)(5x-4) - 2(x-8)(3-2x) \\ &= (8-x)(5x-4) + 2(8-x)(3-2x) \\ &= (8-x)[(5x-4) + 2(3-2x)] \end{aligned}$$

$$\text{donc } \boxed{G(x) = (8-x)(x+2)}.$$