INTERRO DE COURS – SEMAINE 2

Exercice 1 – Développer, réduire et ordonner les expressions suivantes.

1. $A(x) = (4x - 1)(-2x + 3)$

> **Solution :**
> $$\begin{aligned} A(x) &= (4x - 1)(-2x + 3) \\ &= -8x^2 + 12x + 2x - 3 \\ &= -8x^2 + 14x - 3 \end{aligned}$$

2. $B(x) = (5x - 2)^2$

> **Solution :**
> $$\begin{aligned} B(x) &= (5x - 2)^2 \\ &= (5x)^2 - 2 \times (5x) \times 2 + 2^2 \\ &= 25x^2 - 20x + 4 \end{aligned}$$

3. $C(x) = (2x + 3)^2 - (2x - 1)(x - 4)$

> **Solution :**
> $$\begin{aligned} C(x) &= (2x + 3)^2 - (2x - 1)(x - 4) \\ &= (2x)^2 + 2 \times (2x) \times 3 + 3^2 - \left(2x^2 - 8x - x + 4\right) \\ &= 4x^2 + 12x + 9 - \left(2x^2 - 9x + 4\right) \\ &= 4x^2 + 12x + 9 - 2x^2 + 9x - 4 \\ &= 2x^2 + 21x + 5 \end{aligned}$$

Exercice 2 – Factoriser au maximum les expressions données.

1. $A(x) = (2x + 3)(4x - 3) + (2x + 3)^2$

> **Solution :**
> $$\begin{aligned} A(x) &= (2x + 3)(4x - 3) + (2x + 3)^2 \\ &= (2x + 3)(4x - 3) + (2x + 3)(2x + 3) \\ &= (2x + 3)\left(4x - 3 + 2x + 3\right) \\ &= (2x + 3) \times 6x \\ &= 6x(2x + 3) \end{aligned}$$

2. $B(x) = 4x^2 + 8x$

Solution :

$$B(x) = 4x^2 + 8x$$
$$= 4x \times x + 4x \times 2$$
$$= 4x(x + 2)$$

3. $C(x) = 4x^2 - 12x + 9$

Solution :

$$C(x) = 4x^2 - 12x + 9$$
$$= (2x)^2 - 2 \times (2x) \times 3 + 3^2$$
$$= (2x - 3)^2$$

4. $D(x) = (x - 1)^2 - (4x - 2)^2$

Solution :

$$D(x) = (x - 1)^2 - (4x - 2)^2$$
$$= ((x - 1) - (4x - 2))\,((x - 1) + (4x - 2))$$
$$= (x - 1 - 4x + 2)\,(x - 1 + 4x - 2)$$
$$= (-3x + 1)(5x - 3)$$

Exercice 3 – Résoudre les équations suivantes.

1. $-x + 4 = 12$

> **Solution :** $-x + 4 = 12 \iff -x = 8 \iff x = -8$ donc $\mathscr{S} = \{-8\}$

2. $3x - 5 = 0$

> **Solution :** $3x - 5 = 0 \iff 3x = 5 \iff x = \dfrac{5}{3}$ donc $\mathscr{S} = \left\{\dfrac{5}{3}\right\}$

3. $2x - 4 = 3x + \dfrac{1}{2}$

> **Solution :** $2x - 4 = 3x + \dfrac{1}{2} \iff 2x - 3x = \dfrac{1}{2} + 4 \iff -x = \dfrac{9}{2} \iff x = \dfrac{-9}{2}$ donc $\mathscr{S} = \left\{\dfrac{-9}{2}\right\}$

4. $17x + 4 = 24x + 1$

> **Solution :** $17x + 4 = 24x + 1 \iff 17x - 24x = 1 - 4 \iff -7x = -3 \iff x = \dfrac{-3}{-7} = \dfrac{3}{7}$
> donc $\mathscr{S} = \left\{\dfrac{3}{7}\right\}$