MATHEMATIQUES
Calculs, calculs et calculs : corrigé

Exercice 1

1.
$$A = (4x-1)^2 \qquad B = (2+4x)^2 \qquad C = (5-2x)^2 \qquad D = (2x-6)(2x+6)$$
$$A = 16x^2-8x+1 \qquad B = 4+16x+16x^2 \qquad C = 25-20x+25 \qquad D = 4x^2-36$$

2.
$$A = x^2+2x+1 \qquad B = 4x^2-8x+4 \qquad C = 25x^2-36$$
$$A = (x+1)^2 \qquad B = (2x-2)^2 \qquad C = (5x-6)(5x+6)$$

Exercice 2

1.
$$A = (2x+5)(5-3x)$$
$$A = 10x-6x^2+25-15x$$
$$A = -6x^2-5x+25$$

$$B = (5-x)^2-(2x+9)$$
$$B = 25-10x+x^2-2x-9$$
$$B = x^2-12x+16$$

$$C = (x-5)^2-(2x-8)(x-3)$$
$$C = x^2-10x+25-(2x^2-6x-8x+24)$$
$$C = x^2-10x+25-(2x^2-14x+24)$$
$$C = x^2-10x+25-2x^2+14x-24$$
$$C = -x^2+4x+1$$

2.
$$A = 5x^2-3x$$
$$A = x(5x-3)$$

$$B = (3x+4)^2-(3x+4)(x-8)$$
$$B = (3x+4)[(3x+4)-(x-8)]$$
$$B = (3x+4)(3x+4-x+8)$$
$$B = (3x+4)(2x+12)$$

$$C = (5-6x)^2-4(5-6x)$$
$$C = (5-6x)[(5-6x)-4]$$
$$C = (5-6x)(1-6x)$$

Exercice 3

$$4x+8 = 2x-4$$

(Equation du premier degré)

$$4x-2x = -4-8$$
$$2x = -12$$
$$x = \frac{-12}{2}$$
$$x = -6$$

$$\mathscr{S} = \{-6\}$$

$$5(x-5) = 7(x+8)$$

(Equation du premier degré)

$$5x-25 = 7x+56$$
$$5x-7x = 56+25$$
$$-2x = 81$$
$$x = -\frac{81}{2}$$

$$\mathscr{S} = \left\{-\frac{81}{2}\right\}$$

$$x^2-9 = 0$$
$$x^2 = 9$$

(Equation "carré isolé")

$$x = -\sqrt{9} \quad \text{ou} \quad x = \sqrt{9}$$
$$x = -3 \quad \text{ou} \quad x = 3$$

$$\mathscr{S} = \{-3\ ;\ 3\}$$

$$2x^2+8 = 0$$
$$2x^2 = -8$$
$$x^2 = -4 < 0$$

(Equation "carré isolé")
Cette équation n'a pas de solution.

$$\mathscr{S} = \varnothing$$

$$(2x+5)(x+9) = 0$$

(Equation produit nul)

$$2x+5=0 \quad \text{ou} \quad x+9=0$$
$$x = \frac{-5}{2} \quad \text{ou} \quad x = -9$$

$$\mathscr{S} = \left\{-\frac{5}{2}\ ;\ -9\right\}$$