

Exercice 1

$$A = 7ab - 56b = 7ab - 8 \times 7b = 7b(a - 8)$$

$$B = 12xy - 4y = 4y(3x - 1)$$

$$\begin{aligned} C &= (5-x)(x+1) + (2x+7)(5-x) - 3(5-x) \\ &= (5-x)[(x+1) + (2x+7) - 3] = (5-x)(3x+5) \end{aligned}$$

Exercice 2

$$A = 5a^3 + 6a^2 = a^2(5a + 6)$$

$$\begin{aligned} B &= (2-7x)^2 - (2-7x)(3+x) = (2-7x)[(2-7x) - (3+x)] \\ &= (2-7x)(-8x-1) \end{aligned}$$

$$C = (3x+2)^2 - (3x+2) = (3x+2)[(3x+2) - 1] = (3x+2)(3x+1)$$

Exercice 3

$$\begin{aligned} A &= (x-3)(x+3) + (5-x)(3-x) = (x-3)[(x+3) - (5-x)] \\ &= (x-3)(2x-2) \end{aligned}$$

$$\begin{aligned} B &= (x-2)(x+4) + 2-x = (x-2)(x+4) - (x-2) \\ &= (x-2)[(x+4) - 1] = (x-2)(x+3) \end{aligned}$$

Exercice 4

$$A = 9 - x^2 = (3-x)(3+x)$$

$$B = 49x^2 - 16 = (7x-4)(7x+4)$$

$$\begin{aligned} C &= (5x-3)^2 - (2x+5)^2 = [(5x-3) - (2x+5)][(5x-3) + (2x+5)] \\ &= (3x-8)(7x+2) \end{aligned}$$

$$D = 9x^2 + 12x + 4 = (3x+2)^2$$

$$E = 81 - 4x^2 = (9-2x)(9+2x)$$

$$F = 16a^2 - 24a + 9 = (4a-3)^2$$

Exercice 5

$$A = (3-x)^2 + (x-3)(2x-1) + 9-3x$$

$$= (3-x)^2 - (3-x)(2x-1) + 3(3-x) = (3-x) \left[(3-x) - (2x-1) + 3 \right]$$
$$= (3-x)(-3x+7)$$

$$B = 3(1-3x) - (2-6x)^2 = 3(1-3x) - [2(1-3x)]^2 = 3(1-3x) - 4(1-3x)^2$$
$$= (1-3x)(3 - 4(1-3x)) = (1-3x)(12x-1)$$

$$C = (x-4)(x+1) - 2(4-x)^2 = (x-4)(x+1) - 2(x-4)^2$$
$$= (x-4) \left[(x+1) - 2(x-4) \right] = (x-4)(-x+9)$$

$$D = (9x+3)(5x-1) + 1-25x^2 = (9x+3)(5x-1) + (1-5x)(1+5x)$$
$$= (5x-1) \left[(9x+3) - (1+5x) \right] = (5x-1)(4x+2)$$

$$E = (3x-2)(3x+2) + (3x+2) = (3x+2) \left[(3x-2) + 1 \right] = (3x+2)(3x-1)$$

$$F = 15x-3 - (7x+1)(5x-1) = 3(5x-1) - (7x+1)(5x-1)$$
$$= (5x-1)(3 - (7x+1)) = (5x-1)(-7x+2)$$

$$G = (x-2)^3 - 4(x-2) = (x-2) \left[(x-2)^2 - 4 \right] = (x-2) \left[(x-2)-2 \right] \left[(x-2)+2 \right]$$
$$= (x-2)(x-4)(x) = x(x-2)(x-4)$$

$$H = 16x^2-9 + (4x+3)(x-1) = (4x-3)(4x+3) + (4x+3)(x-1)$$
$$= (4x+3) \left[(4x-3) + (x-1) \right] = (4x+3)(5x-4)$$

$$I = 2(x+1)(5-x) + 5(15-3x)^2 = 2(x+1)(5-x) + 5 \cdot [3(5-x)]^2$$
$$= 2(x+1)(5-x) + 5 \cdot 9 \cdot (5-x)^2 = (5-x) \left[2(x+1) + 45(5-x) \right]$$
$$= (5-x)(-43x+227)$$

$$J = (x+4)(x+3) - (x+4)(3x-2)$$

$$J = (x+4) \left[(x+3) - (3x-2) \right] = (x+4)(-2x+5)$$