

Exercice 1 :

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

$$B = (2x + 1) - (-x + 3) = 2x + 1 + x - 3 = 3x - 2$$

$$C = (3 - 2x) - (4 - x^2) + (-6 - 3x) = 3 - 2x - 4 + x^2 - 6 - 3x = x^2 - 5x - 7$$

Lorsqu'on enlève une parenthèse précédée d'un signe « - » les termes à l'intérieur changent de signe.

Exercice 2 :

$$A = 3(x + 8) + 4(7x + 2) = 3 \times x + 3 \times 8 + 4 \times 7x + 4 \times 2 = 3x + 24 + 28x + 8 = 31x + 32$$

$$B = 5(x - 1) - 7x(2 + 3x) = 5 \times x - 5 \times 1 - 7x \times 2 - 7x \times 3x = 5x - 5 - 14x - 21x^2 = -21x^2 - 9x - 5$$

$$C = 2x(4 - 5x) - (x - 7) = 2x \times 4 - 2x \times 5x - x + 7 = 8x - 10x^2 - x + 7 = -10x^2 + 7x + 7$$

$$D = (3 - 8x) - 5(4x - 7) = 3 - 8x - 5 \times 4x - 5 \times (-7) = 3 - 8x - 20x + 35 = -28x + 38$$

$$E = 7(3 - 2x) - 4x(2x - 1) = 7 \times 3 - 7 \times 2x - 4x \times 2x - 4x \times (-1) = 21 - 14x - 8x^2 + 4x = -8x^2 - 10x + 21$$

$$F = 7x - 5(2 - 9x) + 7(9x - 1) = 7x - 5 \times 2 - 5 \times (-9x) + 7 \times 9x - 7 \times 1 = 7x - 10 + 45x + 63x - 7 = 115x - 17$$

Exercice 3 : (légende : SD : simple distributivité / DD : double distributivité)

$$\blacktriangleright A = \underbrace{6(x + 3)}_{SD} + \underbrace{(2x - 3)(3x - 5)}_{DD} = 6 \times x + 6 \times 3 + 2x \times 3x + 2x \times (-5) - 3 \times 3x - 3 \times (-5)$$

$$A = 6x + 18 + 6x^2 - 10x - 9x + 15 = 6x^2 - 13x + 33$$

$$\blacktriangleright B = \underbrace{(8 - 3x)(4x + 1)}_{DD} - \underbrace{x(x + 2)}_{SD} = 8 \times 4x + 8 \times 1 - 3x \times 4x - 3x \times 1 - x \times x - x \times 2$$

$$B = 32x + 8 - 12x^2 - 3x - x^2 - 2x = -13x^2 + 27x + 8$$

$$\blacktriangleright C = (2x + 1) - \underbrace{(6x - 1)(-3x + 8)}_{DD} = 2x + 1 - [6x \times (-3x) + 6x \times 8 - 1 \times (-3x) - 1 \times 8]$$

$$C = 2x + 1 - (-18x^2 + 48x + 3x - 8) = 2x + 1 - (-18x^2 + 51x - 8) = 2x + 1 + 18x^2 - 51x + 8 = 18x^2 - 49x + 9$$

$$\blacktriangleright D = \underbrace{2x(4 - 7x)}_{SD} + \underbrace{(7x + 5)(2x - 6)}_{DD} = 2x \times 4 - 2x \times 7x + 7x \times 2x + 7x \times (-6) + 5 \times 2x + 5 \times (-6)$$

$$D = 8x - 14x^2 + 14x^2 - 42x + 10x - 30 = -24x - 30$$

$$\blacktriangleright E = \underbrace{(3x + 2)(x - 5)}_{DD} - (x - 5) = 3x \times x + 3x \times (-5) + 2 \times x + 2 \times (-5) - x + 5 = 3x^2 - 15x + 2x - 10 - x + 5$$

$$E = 3x^2 - 14x - 5$$

$$\blacktriangleright F = \underbrace{3(7x^2 + 2x - 8)}_{SD} - \underbrace{(4x + 1)(5 - 9x)}_{DD} = 3 \times 7x^2 + 3 \times 2x - 3 \times 8 - [4x \times 5 + 4x \times (-9x) + 1 \times 5 + 1 \times (-9x)]$$

$$F = 21x^2 + 6x - 24 - (20x - 36x^2 + 5 - 9x) = 21x^2 + 6x - 24 - (11x - 36x^2 + 5)$$

$$F = 21x^2 + 6x - 24 - 11x + 36x^2 - 5 = 57x^2 - 5x - 29$$

Exercice 4 : (légende : facteur commun ; \oplus/\ominus : signes)

$$\blacktriangleright A = \boxed{(2x + 3)}(-4x + 1) \oplus \boxed{(2x + 3)}(8 - x) = \boxed{(2x + 3)}[(-4x + 1) \oplus (8 - x)] = (2x + 3)(-4x + 1 + 8 - x)$$

$$A = (2x + 3)(-5x + 9)$$

$$\blacktriangleright B = \boxed{(4 - 5x)}(8x + 1) \ominus \boxed{(4 - 5x)}(7x - 5) = \boxed{(4 - 5x)}[(8x + 1) \ominus (7x - 5)] = (4 - 5x)(8x + 1 - 7x + 5)$$

$$B = (4 - 5x)(x + 6)$$

$$\blacktriangleright C = (7 - 2x)\boxed{(4 + 3x)} \oplus (2 - 7x)\boxed{(3x + 4)} = \boxed{(4 + 3x)}[(7 - 2x) \oplus (2 - 7x)] = (4 + 3x)(7 - 2x + 2 - 7x)$$

$$C = (4 + 3x)(-9x + 9)$$

$$\blacktriangleright D = (9x - 4)(2x + 1) + (9x - 4)^2 = \boxed{(9x - 4)}(2x + 1) \oplus \boxed{(9x - 4)}(9x - 4) = \boxed{(9x - 4)}[(2x + 1) \oplus (9x - 4)]$$

$$D = (9x - 4)(2x + 1 + 9x - 4) = (9x - 4)(11x - 3)$$

$$\blacktriangleright E = \boxed{(2x - 9)}(x - 7) \oplus 3\boxed{(2x - 9)} = \boxed{(2x - 9)}[(x - 7) \oplus 3] = (2x - 9)(x - 7 + 3) = (2x - 9)(x - 4)$$

$$\blacktriangleright F = 3\boxed{(7x + 1)}(4 - 2x) \oplus (5 - x)\boxed{(7x + 1)} = \boxed{(7x + 1)}[3(4 - 2x) \oplus (5 - x)] = (7x + 1)(3 \times 4 - 3 \times 2x + 5 - x)$$

$$F = (7x + 1)(12 - 6x + 5 - x) = (7x + 1)(-7x + 17)$$