

# Correction des exercices de factorisations

## I

Factoriser les expressions suivantes :

$$A(x) = 27x - 36 = 9 \times 3x - 9 \times 4 = \boxed{9(3x - 4)}$$

$$B(x) = D = 27x^4 - 18x^3 - 15x^2 = 3x^2 \times 9x^2 - 3x^2 \times 6x - 3x^2 \times 5 = \boxed{3x^2(9x^2 - 6x + 5)}$$

$$C(x) = x^5 + x^4 = x^4 \times x + x^4 \times 1 = \boxed{x^4(x + 1)}$$

$$D(x) = 5(x + 1) + x(x + 1) = \boxed{(x + 1)(5 + x)}$$

$$E(x) = (x-1)(2x+3) + (x-1)(5x-2) = (x-1)[(2x+3) + (5x-2)] = (x-1)(2x+3+5x-2) = \boxed{(x-1)(7x+1)}$$

$$F(x) = 7(x-7) - x(x-7) + 4(x-7) = (x-7)(7-x+4) = \boxed{(x-7)(11-x)}$$

$$G(x) = (5x+7)(x-1) + (x-1)(3x-4) = (x-1)[(5x+7) + (3x-4)] = (x-1)(5x+7+3x-4) = \boxed{(x-1)(8x+3)}$$

$$H(x) = (3x-2)(x-5) + (x-5)^2 = (3x-2)(x-5) + (x-5)(x-5) = (x-5)[(3x-2) + (x-5)] = \boxed{(x-5)(4x-7)}$$

$$I(x) = (x+7)(5x+2) - 3(5x+2)2 = (x+7)(5x+2) - 3(5x+2)(5x+2) = (5x+2)[(x+7) - 3(5x+2)] \\ = (5x+2)(x+7-15x-6) = \boxed{(5x+2)(-14x+1)}$$

## II (Un peu plus subtil)

Factoriser les expressions suivantes :

$$A(x) = (5x-2) + 4(2x+1)(5x-2) = (5x-2) \times 1 + 4(2x+1)(5x-2) = (5x-2)[1 + 4(2x+1)] = (5x-2)(1+8x+4) \\ = \boxed{(5x-2)(5+8x)}$$

$$B(x) = 7x(2x+3) + 2x+3 = 7x(2x+3) + (2x+3)1 = \boxed{(2x+3)(7x+1)}$$

$$C(x) = (3x+5)(x-1) + (x-1) = (3x+5)(x-1) + (x-1)1 = (x-1)[(3x+5) + 1] = (x-1)(3x+5+1) = \boxed{(x-1)(3x+6)} \\ \text{(forme attendue)} \\ = (x-1) \times 3(x+2) = \boxed{3(x-1)(x+2)} \text{ forme améliorée.}$$

$$D(x) = (7x-2)(3x+4) - (3x+4) = (7x-2)(3x+4) - (3x+4)1 = (3x+4)[(7x-2) - 1] = (3x+4)(7x-2-1) \\ = \boxed{(3x+4)(7x-3)}$$

$$E(x) = (5x-1)(2x+3) - 5x+1 = (5x-1)(2x+3) - (5x-1) = (5x-1)(2x+3) - (5x-1)1 = (5x-1)[(2x+3) - 1] \\ = (5x-1)(2x+3-1) = \boxed{(5x-1)(2x+2)} \text{ (forme attendue)} \\ = \boxed{2(5x-1)(x+1)} \text{ (forme améliorée)}$$