

## 2<sup>nde</sup> : correction de l'AP n° 11 (factorisations)

### Exercice I

Factoriser les expressions suivantes :

$$A(x) = 2x + 8 = 2x + 2 \times 4 = \boxed{2(x+4)}$$

$$B(x) = 3x - 12 = 3x - 3 \times 4 = \boxed{3(x-4)}$$

$$C(x) = 7x + 12x = x(7 + 12) = \boxed{19x}$$

$$D(x) = x^2 - 3x = x \times x - 3x = \boxed{x(x-3)}$$

$$E(x) = x(2x+3) + 5(2x+3) = \boxed{(2x+3)(x+5)}$$

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

$$G(x) = \underbrace{(2x-7)}_a \underbrace{(2x+3)}_b + \underbrace{(2x-7)}_a \underbrace{(5-x)}_c \text{ avec } \begin{cases} a = (2x-7) \\ b = (2x+3) \\ c = (5-x) \end{cases}$$
$$= ab - ac = a(b-c)$$
$$= (2x-7) [(2x+3) + (5-x)] = (2x-7)(2x+3+5-x) = (2x-7)(x+8)$$

$$H(x) = 5x^2 + 3x = \boxed{x(5x+3)}$$

$$I(x) = x^2 + x = \boxed{x(x+1)}$$

$$J(x) = 7x(2-3x) - (2-3x)(x+4) = (2-3x) [7x - (x+4)] = (2-3x)(7x-x-4) = \boxed{(2-3x)(6x-4)}$$

**Remarque :**  $(2-3x)(6x-4) = (2-3x) \times 2(3x-2) = \boxed{2(2-3x)(3x-2)}$

$$K(x) = (x+1)^2 + 5(x+1) = (x+1) [(x+1) + 5] = \boxed{(x+1)(x+6)}$$

### Exercice II Avec un facteur commun « caché »

Faire apparaître le facteur commun, puis factoriser :

$$A(x) = (x+3) + (2x+6)(x-1)$$
$$= \boxed{(x+3)} + 2\boxed{(x+3)}(x-1) = (x+3) [1 + 2(x-1)] = (x+3)(1+2x-2) = \boxed{(x+3)(2x-1)}$$

On remarque que  $(2-x) = -(x-2)$ .

$$B(x) = \text{Alors : } 5(x-2)(x^2+7) + 8x(2-x) = 5(x-2)(x^2+7) + 8x \times [-(x-2)]$$
$$= 5(x-2)(x^2+7) - 8x(x-2)$$
$$= (x-2) [5(x^2+7) - 8x] = \boxed{(x-2)(x^2-8x+7)}$$