

## Factorisations plus simples

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Factoriser les expressions suivantes :

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

$$\begin{aligned} G &= (5x - 2)(2x + 7) - (5x - 2) \\ &= (5x - 2)(2x + 7) - 1(5x - 2) \\ &= (5x - 2) [(2x + 7) - 1] \\ &= (5x - 2)(2x + 6) \\ &= 2(5x - 2)(x + 3) \end{aligned}$$

$$\begin{aligned} H &= 7x - 49 + 14x^2 \\ &= 7(x - 7 + 2x^2) \end{aligned}$$

$$\begin{aligned} I &= 9x^2 + 12x + 4 \\ &= (3x)^2 + 2 \times 3x \times 2 + 2^2 \\ &= (3x + 2)^2 \end{aligned}$$

$$\begin{aligned} J &= (2x - 7)(x + 4) - (2x - 7)(4x + 1) \\ &= (2x - 7) [(x + 4) - (4x + 1)] \\ &= (2x - 7)(-3x + 3) \\ &= 3(2x - 7)(-x + 1) \end{aligned}$$

$$\begin{aligned} K &= (4x - 1)^2 + (2x - 5)(4x - 1) \\ &= (4x - 1) [(4x - 1) + (2x - 5)] \\ &= (4x - 1)(6x - 6) \\ &= 6(4x - 1)(x - 1) \end{aligned}$$

$$\begin{aligned} L &= (x + 7)(3x - 1) + 7x + 49 \\ &= (x + 7)(3x - 1) + 7(x + 7) \\ &= (x + 7) [(3x - 1) + 7] \\ &= (x + 7)(3x + 6) \\ &= 3(x + 7)(x + 2) \end{aligned}$$

$$\begin{aligned} M &= 16x^2 - 81 \\ &= (4x)^2 - 9^2 \\ &= (4x - 9)(4x + 9) \end{aligned}$$

$$\begin{aligned} N &= 49x^2 - \frac{1}{4} \\ &= (7x)^2 - \left(\frac{1}{2}\right)^2 \\ &= \left(7x - \frac{1}{2}\right)\left(7x + \frac{1}{2}\right) \end{aligned}$$

$$\begin{aligned} O &= 9x^2 + 30x + 25 \\ &= (3x)^2 + 2 \times 3x \times 5 + 5^2 \\ &= (3x + 5)^2 \end{aligned}$$

$$\begin{aligned} P &= (2x + 3)^2 - 49 \\ &= (2x + 3)^2 - 7^2 \\ &= [(2x + 3) - 7] [(2x + 3) + 7] \\ &= (2x - 4)(2x + 10) \\ &= 2(x - 2) \times 2(x + 5) \\ &= 4(x - 2)(x + 5) \end{aligned}$$