

## 2,5 Les polynômes de la forme $ax^2 + bx + c$ (2<sup>e</sup> partie)

**Exemple 1 :** Décompose ces trinômes en facteurs.

a)  $6a^2 + 20a - 16$

\* Identifie le PGFC \*

$$\frac{6a^2}{2} + \frac{20a}{2} - \frac{16}{2} \quad \text{PGFC} = 2$$

$$= 2(3a^2 + 10a - 8) \quad \begin{array}{l} \frac{12}{12} \times \frac{-2}{-2} = -24 \\ \frac{12}{12} + \frac{-2}{-2} = 10 \end{array}$$

$$= 2(\underbrace{3a^2 + 12a}_{\text{PGFC} = 3a} - \underbrace{2a - 8}_{\text{PGFC} = -2})$$

$$= 2(3a(a+4) - 2(a+4))$$

$$= 2(a+4)(3a-2)$$

b)  $\frac{-a^2}{-1} - \frac{19a}{-1} + \frac{20}{-1} \quad \text{PGFC} = -1$

$$= -1(a^2 + 19a - 20) \quad \begin{array}{l} \frac{-1}{-1} \times \frac{20}{20} = -20 \\ \frac{-1}{-1} + \frac{20}{20} = 19 \end{array}$$

$$= -1(\underbrace{a^2 - a}_{\text{PGFC} = a} + \underbrace{20a - 20}_{\text{PGFC} = 20})$$

$$= -1(a(a-1) + 20(a-1))$$

$$= -1(a-1)(a+20)$$

c)  $\frac{-4x^2}{-4} - \frac{16x}{-4} + \frac{128}{-4} \quad \text{PGFC} = -4$

$$= -4(x^2 + 4x - 32) \quad \begin{array}{l} \frac{8}{8} \times \frac{-4}{-4} = -32 \\ \frac{8}{8} + \frac{-4}{-4} = 4 \end{array}$$

$$= -4(\underbrace{x^2 + 8x}_{\text{PGFC} = x} - \underbrace{4x - 32}_{\text{PGFC} = -4})$$

$$= -4(x(x+8) - 4(x+8))$$

$$= -4(x+8)(x-4)$$

d)  $\frac{12x^2y}{2y} - \frac{14xy}{2y} - \frac{40y}{2y} \quad \text{PGFC} = 2y$

$$= 2y(6x^2 - 7x - 20) \quad \begin{array}{l} \frac{-15}{-15} \times \frac{8}{8} = -120 \\ \frac{-15}{-15} + \frac{8}{8} = -7 \end{array}$$

$$= 2y(\underbrace{6x^2 - 15x}_{\text{PGFC} = 3x} + \underbrace{8x - 20}_{\text{PGFC} = 4})$$

$$= 2y(3x(2x-5) + 4(2x-5))$$

$$= 2y(2x-5)(3x+4)$$