

Complétion de Carré

Solutionnaire

$$\begin{aligned} 1. \quad x^2 + 8x - 9 &= (x^2 + 8x + 16) - 16 - 9 \\ &= (x+4)^2 - 25 \\ &= (x+4+5)(x+4-5) \quad \left. \begin{array}{l} \text{Différence} \\ \text{de carrés} \end{array} \right\} \\ &= (x+9)(x-1) \end{aligned}$$

$$\begin{aligned} 2. \quad y^2 - 22y + 105 &= (y^2 - 22y + 121) - 121 + 105 \\ &= (y-11)^2 - 16 \\ &= (y-11+4)(y-11-4) \\ &= (y-7)(y-15) \end{aligned}$$

$$\begin{aligned} 3. \quad c^2 + c - 2 &= \left(c^2 + c + \frac{1}{4}\right) - \frac{1}{4} - 2 \\ &= \left(c + \frac{1}{2}\right) - \frac{9}{4} \\ &= \left(c + \frac{1}{2} + \frac{3}{2}\right) \left(c + \frac{1}{2} - \frac{3}{2}\right) \\ &= (c+2)(c-1) \end{aligned}$$

$$\begin{aligned} 4. \quad x^2 + 6x - 16 &= (x^2 + 6x + 9) - 9 - 16 \\ &= (x+3)^2 - 25 \\ &= (x+3+5)(x+3-5) \\ &= (x+8)(x-2) \end{aligned}$$

$$\begin{aligned} 5. \quad 2s^2 + 4s - 70 &= 2(s^2 + 2s - 35) \\ &= 2[s^2 + 2s + 1 - 1 - 35] \\ &= 2[(s+1)^2 - 36] \\ &= 2[(s+1+6)(s+1-6)] \\ &= 2(s+7)(s-5) \end{aligned}$$