

# Calculs courants en mathématiques

$$\begin{aligned} & -(a+b) \\ &= (-1) \times (a+b) \\ &= (-1 \times a) + (-1 \times b) \\ &= -a + (-b) \\ &= -a - b \end{aligned}$$

$$\begin{aligned} & (a-b)(a+b) \\ &= axa + axb - (bxa + bxb) \\ &= axa + ab - ba - (+bxb) \\ &= a^2 + \underbrace{ab - ba}_0 - b^2 \\ &= a^2 - b^2 \end{aligned}$$

$$\begin{aligned} & (a+b)^2 \\ &= (a+b) \times (a+b) \\ &= axa + axb + bxa + bxb \\ &= a^2 + \underbrace{2ab} + b^2 \end{aligned}$$

$$\begin{aligned} & (a+b)(c+d) \\ &= ac + ad + bc + bd \end{aligned}$$

$$\begin{aligned} & (a-b)^2 \\ &= (a-b) \times (a-b) \\ &= (axa - axb) - (bxa - bxb) \\ &= axa - axb - bxa - (-bxb) \\ &= a^2 - \underbrace{ab - ba} + b^2 \\ &= a^2 - (ab + ba) + b^2 \\ &= a^2 - 2ab + b^2 \end{aligned}$$