

Dérivée d'un produit

$$(f \cdot g)' = f' \cdot g + f \cdot g'$$

$$(u \cdot v)' = u' \cdot v + u \cdot v'$$

$$\begin{aligned} ((x+1) \cdot \sin x)' &= (x+1)' \cdot \sin x + (x+1) \cdot (\sin x)' \\ &= 1 \cdot \sin x + (x+1) \cdot \cos x \\ &= \sin x + (x+1) \cos x \end{aligned}$$

$$\text{car } (\sin x)' = \cos x$$

$$\begin{aligned} ((x+1) \cdot (x^2+2x+3))' &= (x+1)' (x^2+2x+3) + (x+1) (x^2+2x+3)' \\ &= 1 \cdot (x^2+2x+3) + (x+1) (2x+2) \\ &= \cancel{x^2} + \cancel{2x} + 3 + \cancel{2x^2} + \cancel{2x} + \cancel{2x} + 2 \\ &= \boxed{3x^2 + 6x + 5} \end{aligned}$$