Dérivée d'un produit

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

$$\boxed{(u \cdot v)' = u' \cdot v + u \cdot v'}$$

$$\big((x+1) \cdot \sin x\big)' = (x+1)' \cdot \sin x + (x+1) \cdot (\sin x)'$$

$$= 1 \cdot \sin x + (x+1) \cdot \cos x$$

$$= \sin x + (x+1)\cos x$$

car $(\sin x)' = \cos x$

$$\Big((x+1)\cdot(x^2+2x+3)\Big)' = (x+1)'(x^2+2x+3) + (x+1)(x^2+2x+3)'$$

$$= 1 \cdot (x^2+2x+3) + (x+1)(2x+2)$$

$$= \cancel{x^2+2x}+3 + \cancel{2x^2+2x+2x}+2$$

$$= \boxed{3x^2+6x+5}$$