

Dérivation d'une somme, d'un produit

1°) $(u + v)' = u' + v'$

$$\begin{array}{l|l} f(x) = x^2 + 8 & f'(x) = 2x + 0 \\ g(x) = 6x + x^3 & g'(x) = 6 + 3x^2 \\ h(x) = \frac{1}{x} - x & h'(x) = -\frac{1}{x^2} - 1 \end{array}$$

2°) $(k \times u)' = k \times u'$

$$\begin{array}{l|l} f(x) = 7 \times x^2 & f'(x) = 7 \times 2x = 14x \\ g(x) = -9 \times x^4 & g'(x) = -9 \times 4x^3 = -36x^3 \\ h(x) = \frac{7}{8} \times \sqrt{x} & h'(x) = \frac{7}{8} \times \frac{1}{2\sqrt{x}} = \frac{7}{16\sqrt{x}} \end{array}$$

3°) $(u \times v)' = uv' + u'v$

$$\begin{array}{l} f(x) = \overbrace{7x}^u \times \overbrace{\sqrt{x}}^v \\ f'(x) = 7x \times \frac{1}{2\sqrt{x}} + 7 \times \sqrt{x} \\ = \frac{7x}{2\sqrt{x}} + 7\sqrt{x} \end{array}$$

$$\begin{array}{l} g(x) = \underbrace{(x+7)}_u \times \underbrace{(-x-8)}_v \\ g'(x) = (x+7) \times (-1) + 1 \times (-x-8) \\ = -x-7-x-8 \\ = -2x-15 \end{array}$$

4°) Mixte.

$$\begin{array}{l} f(x) = 3x^2 + 9x - 7 \\ f'(x) = 3 \times 2x + 9 - 0 \\ f'(x) = 6x + 9 \end{array}$$

$$\begin{array}{l} g(x) = \underbrace{(5x-7)}_u \times \underbrace{(6x^2-9)}_v \\ g'(x) = (5x-7) \times 12x + 5 \times (6x^2-9) \\ = 60x^2 - 84x + 30x^2 - 45 \\ = 90x^2 - 84x - 45 \end{array}$$