

## Règles de dérivation

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$$1. \quad \frac{d}{dx} k = 0 \quad (k \in \mathbf{R})$$

$$2. \quad \frac{d}{dx} x^n = nx^{n-1} \quad (n \in \mathbf{R})$$

$$3. \quad \frac{d}{dx} kg(x) = k \frac{d}{dx} g(x) \quad (k \in \mathbf{R})$$

$$4. \quad \frac{d}{dx} [g(x) + h(x)] = \frac{d}{dx} g(x) + \frac{d}{dx} h(x)$$

$$5. \quad \frac{d}{dx} [g(x) \cdot h(x)] = g(x) \frac{d}{dx} h(x) + h(x) \frac{d}{dx} g(x)$$

$$6. \quad \frac{d}{dx} \left[ \frac{g(x)}{h(x)} \right] = \frac{h(x) \frac{d}{dx} g(x) - g(x) \frac{d}{dx} h(x)}{[h(x)]^2}$$

$$7. \quad \text{Soit } y = g(h(x)), \text{ le résultat de la composition de } \begin{cases} y = g(u) \\ u = h(x) \end{cases}$$

$$\frac{dy}{dx} = \frac{dy}{du} \cdot \frac{du}{dx}$$

$$8. \quad \frac{d}{dx} (g(x))^n = n(g(x))^{n-1} \cdot \frac{d}{dx} g(x) \quad (n \in \mathbf{R})$$

$$9. \quad \frac{dy}{dx} = \frac{1}{\frac{dx}{dy}} \quad (\text{si } \frac{dy}{dx} \text{ existe et } \frac{dy}{dx} \neq 0)$$

$$10. \quad \frac{d}{dx} e^{g(x)} = e^{g(x)} \cdot \frac{d}{dx} g(x)$$

$$11. \quad \frac{d}{dx} \ln g(x) = \frac{1}{g(x)} \cdot \frac{d}{dx} g(x)$$

$$12. \quad \frac{d}{dx} b^{g(x)} = b^{g(x)} \cdot \frac{d}{dx} g(x) \quad (b > 0 \text{ et } b \neq 1)$$

$$13. \quad \frac{d}{dx} \log_b g(x) = \frac{1}{g(x)} \cdot \ln b \cdot \frac{d}{dx} g(x) \quad (b > 0 \text{ et } b \neq 1)$$

$$14. \quad \frac{d}{dx} \sin f(x) = \cos f(x) \cdot \frac{d}{dx} f(x)$$

$$15. \quad \frac{d}{dx} \cos f(x) = -\sin f(x) \cdot \frac{d}{dx} f(x)$$

$$16. \quad \frac{d}{dx} \tan f(x) = \sec^2 f(x) \cdot \frac{d}{dx} f(x)$$

$$17. \quad \frac{d}{dx} \cot f(x) = -\csc^2 f(x) \cdot \frac{d}{dx} f(x)$$

$$18. \quad \frac{d}{dx} \sec f(x) = \sec f(x) \tan f(x) \cdot \frac{d}{dx} f(x)$$

$$19. \quad \frac{d}{dx} \csc f(x) = -\csc f(x) \cot f(x) \cdot \frac{d}{dx} f(x)$$

$$20. \quad \frac{d}{dx} \arcsin f(x) = \frac{1}{\sqrt{1-f(x)^2}} \cdot \frac{d}{dx} f(x)$$

$$21. \quad \frac{d}{dx} \arccos f(x) = \frac{-1}{\sqrt{1-f(x)^2}} \cdot \frac{d}{dx} f(x)$$

$$22. \quad \frac{d}{dx} \arctan f(x) = \frac{1}{1+f(x)^2} \cdot \frac{d}{dx} f(x)$$

$$23. \quad \frac{d}{dx} \operatorname{arccot} f(x) = \frac{-1}{1+f(x)^2} \cdot \frac{d}{dx} f(x)$$

$$24. \quad \frac{d}{dx} \operatorname{arcsec} f(x) = \frac{1}{f(x)\sqrt{f(x)^2-1}} \cdot \frac{d}{dx} f(x)$$

$$25. \quad \frac{d}{dx} \operatorname{arccsc} f(x) = \frac{-1}{f(x)\sqrt{f(x)^2-1}} \cdot \frac{d}{dx} f(x)$$