Differentiation

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1 Rules for differentiation

$$\frac{d}{dx}(n) = 0$$

$$\frac{d}{dx}(x^n) = nx^{n-1}, \quad n \in \mathbb{R}^*$$

$$\frac{d}{dx}(n \cdot f(x)) = n\frac{d}{dx}(f(x))$$

$$\frac{d}{dx}(f + g) = f' + g'$$

$$\frac{d}{dx}(f \cdot g) = g'f + gf'$$

$$\frac{d}{dx}(f(g(x))) = f'(g(x)) \cdot g'(x)$$

$$\frac{d}{dx}(f^g) = f^g \left(\frac{f'g}{f} + g'\ln f\right)$$