

# 导数公式

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$$\text{常数} C' = 0$$

$$(x^\mu)' = \mu \cdot x^{\mu-1}$$

$$(a^x)' = a^x \ln a$$

$$(e^x)' = e^x$$

$$(\log_a x)' = \frac{1}{x \ln a}$$

$$(\ln x)' = \frac{1}{x}$$

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

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

$$(\tan x)' = \sec^2 x$$

$$(\cot x)' = -\csc^2 x$$

$$(\sec x)' = \sec x \cdot \tan x$$

$$(\csc x)' = -\csc x \cdot \cot x$$

$$(\arcsin x)' = \frac{1}{\sqrt{1-x^2}}$$

$$(\arccos x)' = -\frac{1}{\sqrt{1-x^2}}$$

$$(\arctan x)' = \frac{1}{1+x^2}$$

$$(\operatorname{arccot} x)' = -\frac{1}{1+x^2}$$

$$(a \pm b)' = a' \pm b'$$

$$(\text{常数} c \cdot u)' = c \cdot u'$$

$$(ab)' = a'b + ab'$$

$$(abc)' = a'bc + ab'c + abc'$$

$$\left(\frac{a}{b}\right)' = \frac{a'b - ab'}{b^2}$$

Example 1. 标题

例如：

$$y = \sin(nx) \cdot \sin^n x, \text{ 求 } y'$$

$$y' = (\sin nx)' \cdot \sin^n x + (\sin nx) \cdot [(\sin x)^n]'$$

$$= [(\cos nx) \cdot (nx)'] \cdot \sin^n x + (\sin nx) \cdot [n \sin^{n-1} x \cdot \sin' x]$$

$$= (\cos nx) \cdot n \cdot \sin^n x + (\sin nx) \cdot (n \cdot \sin^{n-1} x) \cdot \cos x$$

$$= n (\cos nx) \cdot \sin^n x + n (\sin nx) \cdot \sin^{n-1} x \cdot \cos x$$

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