

# Le Derivate Fondamentali

Tabella completa con esempi e forme generalizzate (Regola della Catena).

Funzione Base $y =$	Derivata $y' =$	Esempio Specifico	Forma Generalizzata $D[f(x)] =$
<b>1. COSTANTI, POTENZE E RADICI</b>			
$k$	$0$	$D[5] = 0$	$-$
$x$	$1$	$D[3x] = 3$	$D[f(x)] = f'(x)$
$x^n$	$nx^{n-1}$	$D[x^3] = 3x^2$	$D[[f(x)]^n] = n[f(x)]^{n-1} \cdot f'(x)$
$\sqrt{x}$	$\frac{1}{2\sqrt{x}}$	$-$	$D[\sqrt{f(x)}] = \frac{f'(x)}{2\sqrt{f(x)}}$
$\frac{1}{x}$	$-\frac{1}{x^2}$	$-$	$D\left[\frac{1}{f(x)}\right] = -\frac{f'(x)}{[f(x)]^2}$
<b>2. ESPONENZIALI E LOGARITMI</b>			
$e^x$	$e^x$	$D[e^{2x}] = e^{2x} \cdot 2$	$D[e^{f(x)}] = e^{f(x)} \cdot f'(x)$
$a^x$	$a^x \ln a$	$D[3^x] = 3^x \ln 3$	$D[a^{f(x)}] = a^{f(x)} \ln a \cdot f'(x)$
$\ln x$	$\frac{1}{x}$	$D[\ln(x^2)] = \frac{1}{x^2} \cdot 2x$	$D[\ln(f(x))] = \frac{f'(x)}{f(x)}$
$\log_a x$	$\frac{1}{x \ln a}$	$D[\log_2 x] = \frac{1}{x \ln 2}$	$D[\log_a(f(x))] = \frac{f'(x)}{f(x) \ln a}$
<b>3. FUNZIONI GONIOMETRICHE E INVERSE</b>			
$\sin x$	$\cos x$	$D[\sin(3x)] = \cos(3x) \cdot 3$	$D[\sin(f(x))] = \cos(f(x)) \cdot f'(x)$
$\cos x$	$-\sin x$	$D[\cos(x^2)] = -\sin(x^2) \cdot 2x$	$D[\cos(f(x))] = -\sin(f(x)) \cdot f'(x)$
$\tan x$	$\frac{1}{\cos^2 x}$	$-$	$D[\tan(f(x))] = \frac{f'(x)}{\cos^2(f(x))}$
$\cot x$	$-\frac{1}{\sin^2 x}$	$-$	$D[\cot(f(x))] = -\frac{f'(x)}{\sin^2(f(x))}$
$\arcsin x$	$\frac{1}{\sqrt{1-x^2}}$	$-$	$D[\arcsin(f(x))] = \frac{f'(x)}{\sqrt{1-[f(x)]^2}}$
$\arccos x$	$-\frac{1}{\sqrt{1-x^2}}$	$-$	$D[\arccos(f(x))] = -\frac{f'(x)}{\sqrt{1-[f(x)]^2}}$
$\arctan x$	$\frac{1}{1+x^2}$	$D[\arctan(2x)] = \frac{1}{1+4x^2} \cdot 2$	$D[\arctan(f(x))] = \frac{f'(x)}{1+[f(x)]^2}$