Tablas de derivadas

Derivadas de las funciones elementales				
Función	Función simple	Ejemplo	Función compuesta	Ejemplo
Simple	$f(x) = k$ $f'(x) = 0$	$f(x) = 3$ $f'(x) = 0$	$f(x) = k$ $f'(x) = 0$	$f(x) = -5$ $f'(x) = 0$
Identidad	$f(x) = x$ $f'(x) = 1$	$f(x) = x$ $f'(x) = 1$	$f(x) = x$ $f'(x) = 1$	$f(x) = x$ $f'(x) = 1$
Potencial	$f(x) = x^a$ $f'(x) = ax^{a-1}$	$f(x) = x^3$ $f'(x) = 3x^2$	$f^a(x)$ $af^{a-1}(x)f'(x)$	$(x+1)^4$ $4(x+1)^3$
Irracional	$f(x) = \sqrt[n]{x}$ $f'(x) = \frac{1}{n\sqrt[n]{x^{n-1}}}$	$f(x) = \sqrt[3]{x}$ $f'(x) = \frac{1}{3\sqrt[3]{x^2}}$	$\sqrt[n]{f(x)}$ $\frac{1}{n\sqrt[n]{f^{n-1}(x)}}f'(x)$	$\sqrt[5]{(x+1)^3}$ $\frac{1}{5\sqrt[5]{[(x+1)^3]^4}}3(x+1)^2$
Exponencial	$f(x) = e^x$ $f'(x) = e^x$	$f(x) = e^x$ $f'(x) = e^x$	$e^{f(x)}$ $e^{f(x)}f'(x)$	e^{x^3+x} $e^{x^3+x}(3x^2+1)$
	$f(x) = a^x$ $f'(x) = a^x \, ln\, a$	$f(x) = 5^x$ $f'(x) = 5^x \, ln\, 5$	$a^{f(x)}$ $a^{f(x)} \cdot ln\, a \cdot f'(x)$	7^{x^3+2x} $7^{x^3+2x} \cdot ln\, 7 \cdot (3x^2+2)$
Logarítmica	$f(x) = ln\, x$ $f'(x) = \frac{1}{x}$	$f(x) = ln\, x$ $f'(x) = \frac{1}{x}$	$ln\, f(x)$ $\frac{1}{f(x)}f'(x)$	$ln(x^4+3x^2)$ $\frac{1}{x^4+3x^2}(4x^3+6x)$
	$f(x) = log_a\, x$ $f'(x) = \frac{1}{x \cdot ln\, a}$	$f(x) = log_2\, x$ $f'(x) = \frac{1}{x \cdot ln\, 2}$	$log_a\, f(x)$ $\frac{1}{f(x) \cdot ln\, a}f'(x)$	$log_3(\sqrt[4]{x+3})$ $\frac{1}{\sqrt[4]{x+3} \cdot ln\, 3}(4\sqrt[4]{(x+3)^3})$

	Función	Derivada
Exponencial potencial	$f(x)^{g(x)}$	$f(x)^{g(x)} \cdot ln\, f(x) \cdot g'(x) + g(x) \cdot f(x)^{g(x)-1} \cdot f'(x)$
	$(x^3+x^2)^{ln\, x^5}$	$(x^3+x^2)^{ln\, x^5} \cdot ln(x^3+x^2) \cdot \frac{1}{x^5}5x^4 + ln\, x^5 \cdot (x^3+x^2)^{(ln\, x^5)-1} \cdot (3x^2+2x)$

Función	Función simple	Ejemplo	Función compuesta	Ejemplo
Seno	$f(x) = sen(x)$ $f'(x) = cos(x)$	$f(x) = sen(x)$ $f'(x) = cos(x)$	$sen(f(x))$ $cos(f(x)) \cdot f'(x)$	$sen((x+1)^3)$ $cos((x+1)^3) \cdot 3(x+1)^2$
Coseno	$f(x) = cos(x)$ $f'(x) = -sen(x)$	$f(x) = cos(x)$ $f'(x) = -sen(x)$	$cos(f(x))$ $-sen(f(x)) \cdot f'(x)$	$cos((x+1)^3)$ $-sen((x+1)^3) \cdot 3(x+1)^2$
Tangente	$f(x) = tg(x)$ $f'(x) = 1 + tg^2(x) =$ $= \frac{1}{cos^2(x)}$	$f(x) = tg(x)$ $f'(x) = 1 + tg^2(x) =$ $= \frac{1}{cos^2(x)}$	$tg(f(x))$ $(1 + tg^2(f(x))) \cdot f'(x) =$ $= \frac{1}{cos^2 f(x)}f'(x)$	$tg((x+1)^3)$ $(1 + tg^2((x+1)^3)) \cdot 3(x+1)^2 =$ $= \frac{1}{cos^2((x+1)^3)}3(x+1)^2$
Cotangente	$f(x) = cotg(x)$ $f'(x) = -1 - cotg^2(x) =$ $= \frac{-1}{sen^2(x)}$	$f(x) = cotg(x)$ $f'(x) = -1 - cotg^2(x) =$ $= \frac{-1}{sen^2(x)}$	$cog(f(x))$ $(-1 - cotg(f(x)))f'(x) =$ $= \frac{-1}{sen^2(f(x))}f'(x)$	$cotg(x^3+x)$ $(-1 - cotg(x^3+x))(3x^2+1) =$ $= \frac{-1}{sen^2(x^3+x)}(3x^2+1)$
Arco seno	$f(x) = arcsen(x)$ $f'(x) = \frac{1}{\sqrt{1-x^2}}$	$f(x) = arcsen(x)$ $f'(x) = \frac{1}{\sqrt{1-x^2}}$	$arcsen(f(x))$ $\frac{1}{\sqrt{1-f^2(x)}}f'(x)$	$arcsen((x+1)^3)$ $\frac{1}{\sqrt{1-((x+1)^3)^2}}3(x+1)^2$
Arco coseno	$f(x) = arccos(x)$ $f'(x) = \frac{-1}{\sqrt{1-x^2}}$	$f(x) = arccos(x)$ $f'(x) = \frac{-1}{\sqrt{1-x^2}}$	$arccos(f(x))$ $\frac{-1}{\sqrt{1-f^2(x)}}f'(x)$	$arccos((x+1)^3)$ $\frac{-1}{\sqrt{1-((x+1)^3)^2}}3(x+1)^2$
Arco tangente	$f(x) = arctg(x)$ $f'(x) = \frac{1}{1+x^2}$	$f(x) = arctg(x)$ $f'(x) = \frac{1}{1+x^2}$	$arctg(f(x))$ $\frac{1}{1+f^2(x)}f'(x)$	$arctg(x^4)$ $\frac{1}{1+(x^4)^2}4x^3$

Derivadas de las funciones elementales		
	Función	Derivada
Suma	$f(x)+g(x)$	$f'(x)+g'(x)$
	$ln\, x^2 + sen(x)$	$\frac{1}{x^2}2x + cos(x)$
Producto	$f(x)\cdot g(x)$	$f'(x)\cdot g(x) + f(x)\cdot g'(x)$
	$ln\, x^2 \cdot sen(x)$	$\frac{1}{x^2}2x \cdot sen(x) + ln\, x^2 \cdot cos(x)$
Cociente	$\frac{f(x)}{g(x)}$	$\frac{f'(x)\cdot g(x) - f(x)\cdot g'(x)}{g^2(x)}$
	$\frac{ln\, x^2}{sen(x)}$	$\frac{\frac{1}{x^2}2x\cdot sen(x) - ln\, x^2\cdot cos(x)}{sen^2(x)}$
Compuesta	$g(f(x))$	$g'(f(x))\cdot f'(x)$
	$ln(sen(x))$	$\frac{1}{sen(x)}\cdot cos(x)$