

## Hallar las derivadas simplificadas de las siguientes funciones

### Ejemplo 1

Dada la función $f(x)$	la reescribimos...	hallamos su derivada...	y la simplificamos...
01) $y = \frac{x^3}{5} - \frac{2}{x^4}$	$y = \frac{1}{5}x^3 - 2x^{-4}$	$y' = \frac{1}{5} \cdot 2x^2 - 2 \cdot (-4) \cdot x^{-5}$	$y' = \frac{2x^2}{5} + \frac{8}{x^5}$
02) $y = \frac{2x^2 - 3x + 1}{x}$	$y = \frac{2x^2}{x} - \frac{3x}{x} + \frac{1}{x}$	$y' = 2 - \frac{1}{x^2}$	$y' = \frac{2x^2 - 1}{x^2}$
03) $y = \frac{x^3 - 3x^2 + 4}{x^2}$	$y = \frac{x^3}{x^2} - \frac{3x^2}{x^2} + 4x^{-2}$	$y' = 1 + 4 \cdot (-2)x^{-3} = 1 - 8x^{-3}$	$y' = \frac{x^3 - 8}{x^3}$
04) $y = (x^2 + 2x)(x+1)$		$y' = (2x+2)(x+1) + (x^2 + 2x)$	$y' = 3x^2 + 6x + 2$
05) $y = x(x^2 + 1)$	$y = x^3 + x$	$y' = 3x^2 + 1$	
06) $y = \frac{4}{x^{-3}}$	$y = 4x^3$	$y' = 12x^2$	
07) $y = \frac{\sqrt{x}}{x}$	$y = x^{\frac{1}{2}} \cdot x^{-1} = x^{-\frac{1}{2}}$	$y' = -\frac{1}{2}x^{-\frac{3}{2}}$	$y' = \frac{-1}{2\sqrt{x^3}}$
08) $y = \sqrt[3]{x} + \sqrt[5]{x}$	$y = x^{\frac{1}{3}} + x^{\frac{1}{5}}$	$y' = \frac{1}{3}x^{-\frac{2}{3}} + \frac{1}{5}x^{-\frac{4}{5}}$	$y' = \frac{1}{3\sqrt[3]{x^2}} + \frac{1}{5\sqrt[5]{x^4}}$
09) $y = x^{\frac{1}{4}} - 1$		$y' = \frac{1}{4}x^{-\frac{3}{4}}$	$y' = \frac{1}{4\sqrt[4]{x^3}}$
10) $y = \frac{\pi}{(5x)^2}$	$y = \pi(5x)^{-2}$	$y' = -2\pi(5x)^{-3} \cdot 5 = -\frac{10\pi}{5^3x^3}$	$y' = \frac{-2\pi}{25x^3}$
11) $y = \frac{x}{\sqrt{x}} - \frac{\sqrt{x}}{x}$	$y = x^{\frac{1}{2}} - x^{-\frac{1}{2}}$	$y' = \frac{1}{2}x^{-\frac{1}{2}} - \left(-\frac{1}{2}\right)x^{-\frac{3}{2}}$	$y' = \frac{1}{2\sqrt{x}} + \frac{1}{2\sqrt{x^3}} = \frac{x+1}{2\sqrt{x^3}}$
12) $y = \ln^3 x$		$y' = \frac{3\ln^2 x}{x}$	

### Ejemplo 2

Dada la función $f(x)$	la reescribimos...	hallamos su derivada...	y la simplificamos...
01) $y = (1 + 3x^4)^5$		$y' = 5(1 + 3x^4)^4 \cdot 12x^3$	$y' = 60x^3(1 + 3x^4)^4$
02) $y = (1 + x + x^2)^3$		$y' = 3(1 + x + x^2)^2 \cdot (1 + 2x)$	$y' = (6x + 3)(1 + x + x^2)^2$
03) $y = \frac{1}{(x^2 - 1)^4}$	$y = (x^2 - 1)^{-4}$	$y' = -4(x^2 - 1)^{-5} \cdot (2x)$	$y' = \frac{-8x}{(x^2 - 1)^5}$
04) $y = \sqrt{1 - x^2}$	$y = (1 - x^2)^{\frac{1}{2}}$	$y' = \frac{1}{2}(1 - x^2)^{-\frac{1}{2}} \cdot (-2x)$	$y' = \frac{-x}{\sqrt{1 - x^2}}$
05) $y = \sqrt[3]{2 + 5x^2}$	$y = (2 + 5x^2)^{\frac{1}{3}}$	$y' = \frac{1}{3}(2 + 5x^2)^{-\frac{2}{3}} \cdot (10x)$	$y' = \frac{10x}{3\sqrt[3]{(2 + 5x^2)^2}}$
06) $y = \frac{1}{\sqrt[3]{(x^3 - 2)^2}}$	$y = (x^3 - 2)^{-\frac{2}{3}}$	$y' = -\frac{2}{3}(x^3 - 2)^{-\frac{5}{3}} \cdot (3x^2)$	$y' = \frac{-2x^2}{\sqrt[3]{(x^3 - 2)^5}}$
07) $y = (5 - 3\cos x)^4$		$y' = 4(5 - 3\cos x)^3 \cdot [(-3)(-\sin x)]$	$y' = 12\sin x(5 - 3\cos x)^3$
08) $y = \frac{1}{\arctg x}$	$y = (\arctg x)^{-1}$	$y' = (-1) \cdot (\arctg x)^{-2} \cdot \frac{1}{1 + x^2}$	$y' = -\frac{1}{(x^2 + 1) \cdot \arctg^2 x}$
09) $y = 2\sin x$		$y' = 2\cos x$	
10) $y = \sin x^2$		$y' = 2x\cos x^2$	
11) $y = \sin(2x)$		$y' = 2\cos 2x$	
12) $y = \sin^2 x$	$y = (\sin x)^2$	$y' = 2\sin x \cdot \cos x$	

## Ejemplo 3

Dada la función $f(x)$	la reescribimos...	hallamos su derivada...	y la simplificamos...
01) $y = 27x - \pi$		$y' = 27$	
02) $y = \frac{x}{11} + \ln \sqrt{2}$		$y' = \frac{1}{11}$	
03) $y = \frac{7}{x}$	$y = 7x^{-1}$	$y' = 7 \cdot (-1)x^{-2}$	$y' = \frac{-7}{x^2}$
04) $y = \frac{5x^2}{4}$		$y' = \frac{5}{4} \cdot 2x$	$y' = \frac{5x}{2}$
05) $y = -\frac{3x}{2}$		$y' = -\frac{3}{2}$	
06) $y = \frac{5}{2x^3}$	$y = \frac{5}{2}x^{-3}$	$y' = \frac{5}{2}(-3)x^{-4}$	$y' = \frac{-15}{2x^4}$
07) $y = -\frac{x^4}{2} + \frac{2x^3}{3}$		$y' = -\frac{1}{2} \cdot 4x^3 + \frac{2}{3} \cdot 3x^2$	$y' = -2x^3 + 2x^2 = -2x^2(x-1)$
08) $y = \frac{5}{(2x)^3}$	$y = \frac{5}{8} \cdot x^{-3}$	$y' = \frac{5}{8} \cdot (-3) \cdot x^{-4}$	$y' = \frac{-15}{8x^4}$
09) $y = \frac{7}{3x^{-2}}$	$y = \frac{7}{3}x^2$	$y' = \frac{7}{3} \cdot 2x$	$y' = \frac{14x}{3}$
10) $y = \frac{7}{(3x)^{-2}}$	$y = 7 \cdot (3x)^2$	$y' = 7 \cdot 2 \cdot (3x) \cdot 3$	$y' = 126x$
11) $y = x \cdot 2^x$		$y' = 2^x + 2^x \ln 2 \cdot x$	$y' = 2^x(1 + x \ln 2)$
12) $y = \operatorname{tg}^2 x^2$	$y = (\operatorname{tg} x^2)^2$	$y' = 2 \operatorname{tg} x^2 \sec^2 x^2 \cdot 2x$	$y' = 4x \cdot \operatorname{tg} x^2 \cdot \sec^2 x^2$

## Ejemplo 4

Dada la función $f(x)$	la reescribimos...	hallamos su derivada...	y la simplificamos...
01) $y = \frac{1}{7} + \sqrt{e}$		$y' = 0$	
02) $y = -x + \sqrt{3}$		$y' = -1$	
03) $y = \sqrt{3x}$		$y' = \sqrt{3}$	
04) $y = \frac{x^4}{9}$		$y' = \frac{4x^3}{9}$	
05) $y = x^3 + 7x^2 + 10$		$y' = 3x^2 + 14x$	
06) $y = -\frac{x^5}{5} + 4x^4 - \frac{x^3}{6} - 3$		$y' = -x^4 + 16x^3 - \frac{x^2}{2}$	
07) $y = 3(x^2 + x + 1)$		$y' = 3(2x + 1)$	$y' = 6x + 3$
08) $y = 4(2x^3 - 3x^2 + 8) - 10x^2 + 2$		$y' = 4(6x^2 - 6x) - 20x$	$y' = 4x(6x - 11)$
09) $y = \frac{2x^3 - 3x^2 + 4x - 7}{2}$		$y' = \frac{6x^2 - 6x + 4}{2}$	$y' = 3x^2 - 3x + 2$
10) $y = (x^2 + 1)(2x^3 - 5)$		$y' = 2x(2x^3 - 5) + 6x^2(x^2 + 1)$	$y' = 10x^4 + 6x^2 - 10x$
11) $y = \frac{1}{x\sqrt{x}}$	$y = x^{-\frac{3}{2}}$	$y' = -\frac{3}{2}x^{-\frac{5}{2}}$	$y' = \frac{-3}{2x^2\sqrt{x}}$
12) $y = \sqrt{2x} + \sqrt[3]{5x}$	$y = (2x)^{\frac{1}{2}} + (5x)^{\frac{1}{3}}$	$y' = \frac{1}{2}(2x)^{-\frac{1}{2}} \cdot 2 + \frac{1}{3}(5x)^{-\frac{2}{3}} \cdot 5$	$y' = \frac{1}{\sqrt{2x}} + \frac{\sqrt[3]{5}}{3\sqrt[3]{x^2}}$
13) $y = \arccos \sqrt{x}$		$y' = \frac{-1}{2\sqrt{x}}$	$y' = \frac{-1}{2\sqrt{x-x^2}}$
14) $y = \operatorname{arctg} e^x$		$y' = \frac{e^x}{1+(e^x)^2}$	$y' = \frac{e^x}{1+e^{2x}}$

## Ejemplo 5

Dada la función $f(x)$	la reescribimos...	hallamos su derivada...	y la simplificamos...
01) $y = 2\sqrt{x}$	$y = 2x^{\frac{1}{2}}$	$y' = 2 \cdot \frac{1}{2} \cdot x^{-\frac{1}{2}}$	$y' = \frac{1}{\sqrt{x}}$
02) $y = \frac{1}{2\sqrt[3]{x^2}}$	$y = \frac{1}{2}x^{-\frac{2}{3}}$	$y' = \frac{1}{2} \cdot \left(-\frac{2}{3}\right) \cdot x^{-\frac{5}{3}}$	$y' = \frac{-1}{3\sqrt[3]{x^5}}$
03) $y = x^2 - \frac{4}{x}$	$y = x^2 - 4x^{-1}$	$y' = 2x + 4x^{-2}$	$y' = 2x + \frac{4}{x^2}$
04) $y = \cos x^4$		$y' = -4x^3 \sin x^4$	
05) $y = \operatorname{sen}(x^3 + 3x - 1)$		$y' = (3x^2 + 3)\cos(x^3 + 3x - 1)$	$y' = 3(x^2 + 1)\cos(x^3 + 3x - 1)$
06) $y = \cos(x^4 - x)$		$y' = (4x^3 - 1)[- \operatorname{sen}(x^4 - x)]$	$y' = (1 - 4x^3)\operatorname{sen}(x^4 - x)$
07) $y = x^2\sqrt{5-2x}$	$y = \sqrt{5x^4 - 2x^5} = (5x^4 - 2x^5)^{\frac{1}{2}}$	$y' = \frac{1}{2}(5x^4 - 2x^5)^{-\frac{1}{2}}(20x^3 - 10x^4)$	$y' = \frac{\cancel{2x^2}(10x - 5x^2)}{\cancel{2x^2}\sqrt{5-2x}} = \frac{5x(2-x)}{\sqrt{5-2x}}$
08) $y = \frac{x}{x^2+1} - \frac{x}{x^2-1}$	$y = \frac{-2x}{x^4-1}$	$y' = \frac{(-2)(x^4-1) - 4x^3(-2x)}{(x^4-1)^2}$	$y' = \frac{6x^4+2}{(x^4-1)^2}$
09) $y = \frac{x^3+3x^2-5x+3}{x}$	$y = x^2 + 3x - 5 + 3x^{-1}$	$y' = 2x + 3 + 3(-1)x^{-2}$	$y' = 2x + 3 - \frac{3}{x^2}$
10) $y = xe^x$		$y' = e^x + xe^x$	$y' = e^x(1+x)$
11) $y = \ln 3x$		$y' = \frac{1}{x}$	
12) $y = x^x$		$y' = x^x(1 + \ln x)$	

## Ejemplo 6

Dada la función $f(x)$	la reescribimos...	hallamos su derivada...	y la simplificamos...
01) $y = \frac{1}{x}$		$y' = -\frac{1}{x^2}$	
02) $y = \frac{1}{x^3}$		$y' = -\frac{3}{x^4}$	
03) $y = -\frac{1}{x^3+1}$		$y' = \frac{3x^2}{(x^3+1)^2}$	
04) $y = \frac{2}{x^5}$		$y' = -\frac{2 \cdot 5x^4}{x^{10}}$	$y' = \frac{-10}{x^6}$
05) $y = \frac{2}{x^3} + \frac{1}{x^2} - \frac{3}{x}$		$y' = -\frac{6x^2}{x^6} - \frac{2x}{x^4} + \frac{3}{x^2}$	$y' = \frac{3x^2 - 2x - 6}{x^4}$
06) $y = \sqrt[3]{x^2}$	$y = x^{\frac{2}{3}}$	$y' = \frac{2}{3}x^{-\frac{1}{3}}$	$y' = \frac{2}{3\sqrt[3]{x}}$
07) $y = \sqrt[5]{x^3}$	$y = x^{\frac{3}{5}}$	$y' = \frac{3}{5}x^{-\frac{2}{5}}$	$y' = \frac{3}{5\sqrt[5]{x^2}}$
08) $y = 2\sqrt[3]{x^2} - 3x^2 + \frac{1}{5}$	$y = 2x^{\frac{2}{3}} - 3x^2 + \frac{1}{5}$	$y' = 2 \cdot \frac{2}{3}x^{-\frac{1}{3}} - 6x$	$y' = \frac{4}{3\sqrt[3]{x}} - 6x$
09) $y = (x+2)^5$		$y' = 5(x+2)^4$	
10) $y = (2x^2 - 3x + 1)^3$		$y' = 3(2x^2 - 3x + 1)^2(4x - 3)$	$y' = (12x - 9)(2x^2 - 3x + 1)^2$
11) $y = \sqrt{x^2 + x + 1}$		$y' = \frac{2x+1}{2\sqrt{x^2+x+1}}$	
12) $y = \frac{\sqrt{x^2+1}}{\sqrt{x^2-1}}$	$y = \sqrt{\frac{x^2+1}{x^2-1}} = \left(\frac{x^2+1}{x^2-1}\right)^{\frac{1}{2}}$	$y' = \frac{1}{2}\left(\frac{x^2+1}{x^2-1}\right)^{-\frac{1}{2}} \cdot \frac{2x(x^2-1) - 2x(x^2+1)}{(x^2-1)^2}$	$y' = \frac{-2x}{\sqrt{(x^2+1)(x^2-1)^3}}$

## Ejemplo 7

Dada la función $f(x)$	la reescribimos...	hallamos su derivada...	y la simplificamos...
01) $y = \frac{1}{3\cos^3 x} - \frac{1}{\cos x}$	$y = \frac{1}{3}(\cos x)^{-3} - (\cos x)^{-1}$	$y' = \frac{1}{3}(-3)(\cos x)^{-4}(-\operatorname{sen} x) - (-1)(\cos x)^{-2}(-\operatorname{sen} x)$	$y' = \frac{\operatorname{sen} x}{\cos^4 x} - \frac{\operatorname{sen} x}{\cos^2 x} = \operatorname{tg}^3 x \cdot \sec x$
02) $y = (x+1)(2x+1)(3x+1)$		$y' = (2x+1)(3x+1) + 2(x+1)(3x+1) + 3(x+1)(2x+1)$	$y' = 18x^2 + 22x + 6$
03) $y = e^{\frac{x}{2}} \operatorname{sen} x$		$y' = \frac{e^{\frac{x}{2}} \operatorname{sen} x}{2} + e^{\frac{x}{2}} \cos x$	$y' = \frac{e^{\frac{x}{2}} (\operatorname{sen} x + 2 \cos x)}{2}$
04) $y = \frac{x}{3} \cdot e^{-x}$	$y = \frac{1}{3} x \cdot e^{-x}$	$y' = \frac{1}{3} \cdot (e^{-x} - e^{-x} \cdot x)$	$y' = \frac{e^{-x}(1-x)}{3}$
05) $y = \left(\frac{3x-5}{2}\right)^3$	$y = \frac{1}{8}(3x-5)^3$	$y' = \frac{1}{8}[3 \cdot (3x-5)^2 \cdot 3]$	$y' = \frac{9(3x-5)^2}{8}$
06) $y = (1 - \operatorname{sen} 5x)^4$		$y' = 4(1 - \operatorname{sen} 5x)^3 (-\cos 5x \cdot 5)$	$y' = -20 \cos 5x \cdot (1 - \operatorname{sen} 5x)^3$
07) $y = \sqrt{xe^x + x}$	$y = (xe^x + x)^{\frac{1}{2}}$	$y' = \frac{1}{2}(xe^x + x)^{-\frac{1}{2}}(1 + e^x + xe^x)$	$y' = \frac{e^x(x+1)+1}{2\sqrt{xe^x+x}}$
08) $y = \sqrt[3]{2^x + x}$	$y = (2^x + x)^{\frac{1}{3}}$	$y' = \frac{1}{3}(2^x + x)^{-\frac{2}{3}}(2^x \ln 2 + 1)$	$y' = \frac{2^x \ln 2 + 1}{3\sqrt[3]{(2^x + x)^2}}$
09) $y = \ln(\ln x)$		$y' = \frac{1}{x} \cdot \frac{1}{\ln x}$	$y' = \frac{1}{x \ln x}$
10) $y = \ln(\operatorname{sen} x)$		$y' = \frac{\cos x}{\operatorname{sen} x}$	$y' = \operatorname{cotg} x$
11) $y = \frac{1 + \cos 2x}{1 - \cos 2x}$		$y' = \frac{2(-\operatorname{sen} 2x) \cdot (1 - \cos 2x) - 2(-1)(-\operatorname{sen} 2x)(1 + \cos 2x)}{(1 - \cos 2x)^2}$	$y' = \frac{-4 \operatorname{sen} 2x}{(1 - \cos 2x)^2}$
12) $y = \operatorname{arctg}\left(\frac{1}{x}\right)$		$y' = \frac{-1/x^2}{1 + (1/x)^2} = -\frac{x^{\cancel{2}}}{x^{\cancel{2}}(x^2 + 1)}$	$y' = \frac{-1}{x^2 + 1}$

## Ejemplo 8

Dada la función $f(x)$	la reescribimos...	hallamos su derivada...	y la simplificamos...
01) $y = \operatorname{sen}^2 x + 3 \cos^5(2x)$			$y' = 2 \cos x \operatorname{sen} x - 30 \cos^4(2x) \operatorname{sen}(2x)$
02) $y = \operatorname{tg} \sqrt{x}$		$y' = \sec^2 \sqrt{x} \cdot \frac{1}{2\sqrt{x}}$	$y' = \frac{\sec^2 \sqrt{x}}{2\sqrt{x}}$
03) $y = \operatorname{sen}(3x+1) \cdot \cos(3x+1)$		$y' = 3 \cos(3x+1) \cdot \cos(3x+1) - 3 \operatorname{sen}(3x+1) \cdot \operatorname{sen}(3x+1)$	$y' = 3[\cos^2(3x+1) - \operatorname{sen}^2(3x+1)]$
04) $y = e^{-x} \cos(3x)$		$y' = -e^{-x} \cos(3x) + (-\operatorname{sen}(3x) \cdot 3)e^{-x}$	$y' = -e^{-x}(3 \operatorname{sen}(3x) + \cos(3x))$
05) $y = \operatorname{sen} x^3 + 2 \cos^3(2x)$		$y' = \cos x^3 \cdot 3x^2 + 2 \cdot 3 \cdot \cos^2(2x) \cdot (-\operatorname{sen}(2x)) \cdot 2$	$y' = 3x^2 \cos x^3 - 12 \cos^2(2x) \operatorname{sen}(2x)$
06) $y = \frac{\operatorname{sen}(x^2+1)}{\sqrt{1-x^2}}$		$y' = \frac{2x \cos(x^2+1) \sqrt{1-x^2} + \frac{x \operatorname{sen}(x^2+1)}{\sqrt{1-x^2}}}{1-x^2}$	$y' = \frac{2x(1-x^2) \cos(x^2+1) + x \operatorname{sen} x^2 + 1}{\sqrt{(1-x^2)^3}}$
07) $y = \operatorname{sen}^4 x$	$y = (\operatorname{sen} x)^4$	$y' = 4(\operatorname{sen} x)^3 \cdot \cos x$	
08) $y = \frac{\pi}{x^2} + e - \ln 2$		$y' = \frac{-2x\pi}{x^4}$	$y' = \frac{-2\pi}{x^3}$
09) $y = \cos x \cdot e^x$		$y' = (-\operatorname{sen} x) \cdot e^x + e^x \cdot \cos x$	$y' = e^x(\cos x - \operatorname{sen} x)$
10) $y = x^3 \cdot \operatorname{sen} x$		$y' = 3x^2 \operatorname{sen} x + \cos x \cdot x^3$	$y' = x^2(3 \operatorname{sen} x + x \cos x)$
11) $y = \cos(5x)$		$y' = -\operatorname{sen}(5x) \cdot 5$	$y' = -5 \operatorname{sen}(5x)$
12) $y = \frac{1}{x+1} - \frac{x+2}{x^2-1}$	$y = \frac{-3}{x^2-1}$	$y' = \frac{-(2x)(-3)}{x^2-1}$	$y' = \frac{6x}{(x^2-1)^2}$
13) $y = \frac{2x+1}{x^2+x-12}$		$y' = \frac{2(x^2+x-12) - (2x+1)(2x+1)}{(x^2+x-12)^2}$	$y' = -\frac{2x^2+2x+25}{(x^2+x-12)^2}$
14) $y = \frac{5x^2+3}{(4x^3+2x)^2}$		$y' = \frac{10x(4x^3+2x)^{\cancel{2}} - 2(4x^3+2x)(12x^2+2)(5x^2+3)}{(4x^3+2x)^{\cancel{4}}}$	$y' = -\frac{20x^4+18x^2+3}{2x^3(2x^2+1)^3}$

## Ejemplo 9

Dada la función $f(x)$	la reescribimos...	hallamos su derivada...	y la simplificamos...
01) $y = \text{sen}(x^2 - 5x + 7)$		$y' = \cos(x^2 - 5x + 7) \cdot (2x - 5)$	$y' = (2x - 5) \cdot \cos(x^2 - 5x + 7)$
02) $y = \sqrt[3]{(5x+3)^2}$	$y = (5x+3)^{\frac{2}{3}}$	$y' = \frac{2}{3}(5x+3)^{-\frac{1}{3}} \cdot 5$	$y' = \frac{10}{3\sqrt[3]{5x+3}}$
03) $y = \frac{\ln x^2}{x}$		$y' = \frac{\frac{2x}{x^2} \cdot x - \ln x}{x^2}$	$y' = \frac{2 - \ln x^2}{x^2}$
04) $y = \cos(3x - \pi)$		$y' = -\text{sen}(3x - \pi) \cdot 3$	$y' = 3\text{sen}(3x)$
05) $y = \sqrt{1+2x}$		$y' = \frac{1}{\sqrt{1+2x}}$	
06) $y = xe^{2x+1}$		$y' = e^{2x+1} + e^{2x+1} \cdot 2x$	$y' = e^{2x}(e + 2ex)$
07) $y = \ln(3x-1)$		$y' = \frac{3}{3x-1}$	
08) $y = e^{2x} \cdot \ln(x^2+1)$		$y' = e^{2x} \cdot 2 \cdot \ln(x^2+1) + \frac{2x}{x^2+1} \cdot e^{2x}$	$y' = 2e^{2x} \left[ \ln(x^2+1) + \frac{x}{x^2+1} \right]$
09) $y = x \cdot 2^{x+1}$		$y' = 2^{x+1} + x2^{x+1} \ln 2$	$y' = 2^x(2 + 2x \ln 2)$
10) $y = 7^{x+1}$		$y' = 7^{x+1} \ln 7$	
11) $y = \sqrt[5]{(x+6)^2}$	$y = (x+6)^{\frac{2}{5}}$	$y' = \frac{2}{5}(x+6)^{-\frac{3}{5}}$	$y' = \frac{2}{5\sqrt[5]{(x+6)^3}}$
12) $y = \frac{-3}{\sqrt{1-x^2}}$	$y = -3(1-x^2)^{-\frac{1}{2}}$	$y' = -3 \cdot \left(-\frac{1}{2}\right) (1-x^2)^{-\frac{3}{2}} (-2x)$	$y' = \frac{-3x}{\sqrt{(1-x^2)^3}}$
13) $y = \ln \sqrt{x}$		$y' = \frac{1}{2x}$	

## Ejemplo 10

Dada la función $f(x)$	la reescribimos...	hallamos su derivada...	y la simplificamos...
01) $y = \sqrt{\text{sen } x}$	$y = (\text{sen } x)^{\frac{1}{2}}$	$y' = \frac{1}{2}(\text{sen } x)^{-\frac{1}{2}} \cdot \cos x$	$y' = \frac{\cos x}{2\sqrt{\text{sen } x}}$
02) $y = \text{sen}^2 x^2$	$y = (\text{sen } x^2)^2$	$y' = 2 \text{sen } x^2 \cdot \cos x^2 \cdot 2x$	$y' = 4x \cos x^2 \text{sen } x^2$
03) $y = \frac{\log x}{x}$		$y' = \frac{1}{x \ln 10} \cdot x' - \log x$	$y' = \frac{1 - \ln 10 \log x}{x^2 \ln 10} = \frac{1 - \ln x}{x^2 \ln 10}$
04) $y = \frac{1}{\cos^2 x}$	$y = (\cos x)^{-2}$	$y' = -2(\cos x)^{-3} \cdot (-\text{sen } x)$	$y' = \frac{2 \text{sen } x}{\cos^3 x}$
05) $y = (x^2+1) \log_2 x$	$y = (x^2+1) \cdot \frac{\ln x}{\ln 2}$	$y' = 2x \cdot \frac{\ln x}{\ln 2} + \frac{1}{\ln 2} \cdot \frac{1}{x} (x^2+1)$	$y' = \frac{2x^2 \ln x + x^2 + 1}{x \ln 2}$
06) $y = \frac{x^2+1}{x^2-1}$		$y' = \frac{2x(x^2-1) - 2x(x^2+1)}{(x^2-1)^2}$	$y' = \frac{-4x}{(x^2-1)^2}$
07) $y = (1+e^x)^2$		$y' = 2(1+e^x) \cdot e^x$	$y' = 2e^x(1+e^x)$
08) $y = \ln \sqrt{x}$		$y' = \frac{1}{2\sqrt{x}} \cdot \frac{1}{\sqrt{x}}$	$y' = \frac{1}{2x}$
09) $y = \frac{e^{2x}}{1-5x}$		$y' = \frac{2e^x(1-5x) - (-5)e^{2x}}{(1-5x)^2}$	$y' = \frac{e^{2x}(7-10x)}{(1-5x)^2}$
10) $y = \cos(x/2)$		$y' = -\frac{1}{2} \text{sen}(x/2)$	$y' = \frac{-\text{sen}(x/2)}{2}$