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$2)\ y = 5x^2 + 7x - 2\sqrt{x} \quad \rightarrow \quad y' = 10x + 7 - 2\frac{1}{2\sqrt{x}} = 10x + 7 - \frac{1}{\sqrt{x}}$

$7)\ y = \frac{2x^3 - 5x + 3}{x^2} \quad \rightarrow \quad y' = \frac{(6x^2 - 5)x^2 - (2x^3 - 5x + 3)2x}{(x^2)^2} = \frac{6x^4 - 5x^2 - 4x^4 + 10x^2 - 6x}{x^4} =$

$$= \frac{2x^4 + 5x^2 - 6x}{x^4} = 2 + 5x^{-2} - 6x^{-3}$$

$$y = \frac{2x^3 - 5x + 3}{x^2} = 2x - \frac{5}{x} + \frac{3}{x^2} = 2x - 5x^{-1} + 3x^{-2}$$

$$y' = 2 - 5(-1x^{-2}) + 3(-2x^{-3}) = 2 + 5x^{-2} - 6x^{-3}$$

$8)\ y = \frac{x^2 + 1}{x^2 - 1} \quad \rightarrow \quad y' = \frac{2x(x^2 - 1) - (x^2 + 1)2x}{(x^2 - 1)^2} = \frac{2x^3 - 2x - 2x^3 - 2x}{(x^2 - 1)^2} = \frac{-4x}{(x^2 - 1)^2}$

Derivadas de funciones elementales

$y = e^x \quad \rightarrow \quad y' = e^x$

$y = 2^x \quad \rightarrow \quad y' = 2^x\ Ln\ 2$

$y = a^x \quad \rightarrow \quad y' = a^x\ Ln\ a$

$y = Ln\ x \quad \rightarrow \quad y' = \frac{1}{x}$

$y = \log_a x \quad \rightarrow \quad y' = \frac{1}{x\ Ln\ a}$

$y = sen\ x \quad \rightarrow \quad y' = \cos x$

$y = \cos x \quad \rightarrow \quad y' = -sen\ x$

$y = tg\ x \quad \rightarrow \quad y' = \frac{1}{\cos^2 x} \quad ó \quad y' = (1 + tg^2 x)$

$y = arcsen\ x \quad \rightarrow \quad y' = \frac{1}{\sqrt{1 - x^2}}$

$y = \arccos x \quad \rightarrow \quad y' = \frac{-1}{\sqrt{1 - x^2}}$

$y = arctg\ x \quad \rightarrow \quad y' = \frac{1}{1 + x^2}$

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$$3) \quad y = \sqrt{3x^3}\ e^x = \sqrt{3}\ \sqrt{x^3}\ e^x = \sqrt{3}\ x^{\frac{3}{2}}\ e^x$$

$$y' = \sqrt{3}\ \frac{3}{2}\ x^{\frac{3}{2}-1}\ e^x + \sqrt{3}\ x^{\frac{3}{2}}\ e^x = \frac{3\sqrt{3}}{2}\sqrt{x}\ e^x + \sqrt{3}\ \sqrt{x^3}\ e^x$$

5) $y = x\,3^x\ tg\ x$

$$y' = 1\cdot 3^x\ tg\ x + 3^x\ Ln\,3\,(\,x\ tg\ x) + \frac{1}{\cos^2 x}\,x\,3^x = 3^x\ tg\ x + 3^x\ Ln\,3\,(\,x\ tg\ x) + \frac{1}{\cos^2 x}\,x\,3^x$$

6) $y = \dfrac{\log_2 x}{x}$

$$y' = \frac{\frac{1}{x\ Ln\,2}\,x - (\log_2 x)\cdot 1}{x^2} = \frac{\frac{1}{Ln\,2} - \log_2 x}{x^2}$$

9) $y = (arcsen\ x)(x+3)$

$$y' = \frac{1}{\sqrt{1-x^2}}(x+3) + (arcsen\ x)\cdot 1 = \frac{x+3}{\sqrt{1-x^2}} + arcsen\ x$$

Ejercicios

$y = (3x^2 - 5x + 7)\cos x$

$y' = (6x-5)\cos x + (3x^2 - 5x + 7)(-sen\ x) = (6x-5)\cos x - (3x^2 - 5x + 7)\,sen\ x$

$y = 5^x\ tg\ x$

$y' = 5^x (Ln\,5)\,tg\ x + 5^x \dfrac{1}{\cos^2 x}$

$y = \dfrac{x + e^x}{2^x - x^3} \quad \rightarrow \quad y' = \dfrac{(1+e^x)(2^x - x^3) - (x+e^x)(2^x\ Ln\,2 - 3x^2)}{(2^x - x^3)^2}$

$y = 5\ arctg\ x - \cos x + 3Ln\,x + 7\,.\,6^x$

$y = \dfrac{3 - sen\ x + 4\,x^3}{\log_5 x - tg\ x}$

$y = (\arccos x - arctg\ x)(3\ tg\ x + 5\cos x)$