Funções importantes

(Omitem-se os domínios das funções.)

$$\operatorname{sen}^2 x + \cos^2 x = 1$$

$$1 + \operatorname{tg}^2 x = \frac{1}{\cos^2 x}$$

$$1 + \operatorname{cotg}^2 x = \frac{1}{\operatorname{sen}^2 x}$$

$$\operatorname{sen}(-x) = -\operatorname{sen} x \quad \text{(a função é ímpar)}$$

$$\cos(-x) = \cos x \quad \text{(a função é par)}$$

$$\operatorname{sen}(\tfrac{\pi}{2} - x) = \cos x$$

$$\cos(\tfrac{\pi}{2} - x) = \operatorname{sen} x$$

$$\cos(x + y) = \cos x \, \cos y - \operatorname{sen} y \, \operatorname{sen} x$$

$$\operatorname{sen}(x + y) = \operatorname{sen} x \, \cos y + \operatorname{sen} y \, \cos x$$

$$\cos x - \cos y = -2 \operatorname{sen} \tfrac{x-y}{2} \, \operatorname{sen} \tfrac{x+y}{2}$$

$$\operatorname{sen} x - \operatorname{sen} y = 2 \operatorname{sen} \tfrac{x-y}{2} \, \cos \tfrac{x+y}{2}$$

$$\cos^2 x = \frac{1 + \cos 2x}{2}$$

$$\operatorname{sen}^2 x = \frac{1 - \cos 2x}{2}$$

$$\operatorname{sh} x = \frac{e^x - e^{-x}}{2}$$

$$\operatorname{ch} x = \frac{e^x + e^{-x}}{2}$$

$$\operatorname{ch}^2 x - \operatorname{sh}^2 x = 1$$

$$\operatorname{ch} x + \operatorname{sh} x = e^x$$

$$\operatorname{th}^2 x + \frac{1}{\operatorname{ch}^2 x} = 1$$

$$\operatorname{coth}^2 x - \frac{1}{\operatorname{sh}^2 x} = 1$$

$$\operatorname{sh}(-x) = -\operatorname{sh} x \quad \text{(a função é ímpar)}$$

$$\operatorname{ch}(-x) = \operatorname{ch} x \quad \text{(a função é par)}$$

$$\operatorname{sh}(x + y) = \operatorname{sh} x \, \operatorname{ch} y + \operatorname{sh} y \, \operatorname{ch} x$$

$$\operatorname{ch}(x + y) = \operatorname{ch} x \, \operatorname{ch} y + \operatorname{sh} y \, \operatorname{sh} x$$

x	0	$\dfrac{\pi}{6}$	$\dfrac{\pi}{4}$	$\dfrac{\pi}{3}$	$\dfrac{\pi}{2}$
$\operatorname{sen} x$	0	$\dfrac{1}{2}$	$\dfrac{\sqrt{2}}{2}$	$\dfrac{\sqrt{3}}{2}$	1
$\cos x$	1	$\dfrac{\sqrt{3}}{2}$	$\dfrac{\sqrt{2}}{2}$	$\dfrac{1}{2}$	0

Regras de derivação

(Omitem-se os domínios das funções e considera-se a uma constante apropriada.)

$a' = 0$

$(f \pm g)'(x) = f'(x) \pm g'(x)$

$(f\,g)'(x) = f'(x)\,g(x) + f(x)\,g'(x)$

$\left(\dfrac{f}{g}\right)'(x) = \dfrac{f'(x)\,g(x) - f(x)\,g'(x)}{g^2(x)}$

$(x^a)' = a\,x^{a-1}$

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

$\log_a' x = \dfrac{1}{x \ln a}$

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

$\ln' x = \dfrac{1}{x}$

$\operatorname{sen}' x = \cos x$

$\cos' x = -\operatorname{sen} x$

$\operatorname{tg}' x = \dfrac{1}{\cos^2 x}$

$\operatorname{cotg}' x = -\dfrac{1}{\operatorname{sen}^2 x}$

$\operatorname{sh}' x = \operatorname{ch} x$

$\operatorname{ch}' x = \operatorname{sh} x$

$\operatorname{th}' x = \dfrac{1}{\operatorname{ch}^2 x}$

$\operatorname{coth}' x = -\dfrac{1}{\operatorname{sh}^2 x}$

$\operatorname{arcsen}' x = \dfrac{1}{\sqrt{1 - x^2}}$

$\operatorname{arccos}' x = \dfrac{-1}{\sqrt{1 - x^2}}$

$\operatorname{arctg}' x = \dfrac{1}{1 + x^2}$

$\operatorname{arccotg}' x = \dfrac{-1}{1 + x^2}$

$\operatorname{argsh}' x = \dfrac{1}{\sqrt{1 + x^2}}$

$\operatorname{argch}' x = \dfrac{1}{\sqrt{x^2 - 1}}$

$\operatorname{argth}' x = \dfrac{1}{1 - x^2}$

$\operatorname{argcoth}' x = \dfrac{1}{1 - x^2}$

$(g \circ u)'(x) = g'(u(x))\,u'(x)$

$(f^{-1})'(y) = \dfrac{1}{f'(f^{-1}(y))}$