Cálculo

Funções importantes

(Omitem-se os domínios das funções.)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$\operatorname{sen}(\arccos x) = \sqrt{1 - x^2}$$

$$\operatorname{tg}(\arccos x) = \frac{\sqrt{1 - x^2}}{x}$$

$$\cos(\operatorname{arcsen} x) = \sqrt{1 - x^2}$$

$$\operatorname{tg}(\operatorname{arcsen} x) = \frac{x}{\sqrt{1 - x^2}}$$