Formulário 2 - Funções importantes

Algumas fórmulas sobre funções trigonométricas

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

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

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

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

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

- $\operatorname{sen} 2x = 2 \operatorname{sen} x \cos x$

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

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

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

- $\cos^2 x = \dfrac{1 + \cos 2x}{2}, \qquad \operatorname{sen}^2 x = \dfrac{1 - \cos 2x}{2}$

	$\pi/6$	$\pi/4$	$\pi/3$
sen	$1/2$	$\sqrt{2}/2$	$\sqrt{3}/2$
cos	$\sqrt{3}/2$	$\sqrt{2}/2$	$1/2$

	0	$\pi/2$	π	$3\pi/2$
sen	0	1	0	-1
cos	1	0	-1	0

- $\operatorname{sen}(-x) = -\operatorname{sen} x$

- $\cos(-x) = \cos x$

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

- $\cos(\pi - x) = -\cos x$

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

- $\cos(\pi + x) = -\cos x$

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

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

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

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

- $\operatorname{sen}(3\pi/2 - x) = -\cos x$

- $\cos(3\pi/2 - x) = -\operatorname{sen} x$

- $\operatorname{sen}(3\pi/2 + x) = -\cos x$

- $\cos(3\pi/2 + x) = \operatorname{sen} x$

Algumas fórmulas sobre funções hiperbólicas

- $\operatorname{sh} x = \dfrac{e^x - e^{-x}}{2}, \quad \operatorname{ch} x = \dfrac{e^x + e^{-x}}{2}$

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

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

- $\operatorname{sh}(-x) = -\operatorname{sh} x, \quad \operatorname{ch}(-x) = \operatorname{ch} x$

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

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

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

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

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

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

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

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

- $\operatorname{sh}^2 x = \dfrac{\operatorname{ch}(2x) - 1}{2}, \quad \operatorname{ch}^2 x = \dfrac{\operatorname{ch}(2x) + 1}{2}$