Funções trigonométricas e hiperbólicas

(Omitem-se os domínios das funções.)

$$\sin^2 x + \cos^2 x = 1$$

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

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

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

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

$$\sin(x + y) = \sin x \cos y + \sin y \cos x$$

$$\cos(x + y) = \cos x \cos y - \sin y \sin x$$

$$\cos x - \cos y = -2 \sin \frac{x - y}{2} \sin \frac{x + y}{2}$$

$$\sin x - \sin y = 2 \sin \frac{x - y}{2} \cos \frac{x + y}{2}$$

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

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

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

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

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

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

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

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

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

Mudança de coordenadas em $\mathbb{R}^3$

De Cilíndricas a Cartesianas

$$x = r \cos \theta$$
$$y = r \sin \theta$$
$$z = z$$

De Esféricas a Cartesianas

$$x = \rho \sin \phi \cos \theta$$
$$y = \rho \sin \phi \sin \theta$$
$$z = \rho \cos \phi$$