

Goniometrické a hyperbolické funkce (porovnání)

$$\begin{aligned}\sin x &= \frac{e^{ix} - e^{-ix}}{2i} \\ \cos x &= \frac{e^{ix} + e^{-ix}}{2} \\ e^{ix} &= \cos x + i \sin x\end{aligned}$$

$$\begin{aligned}\sinh x &= \frac{e^x - e^{-x}}{2} \\ \cosh x &= \frac{e^x + e^{-x}}{2} \\ e^x &= \cosh x + \sinh x\end{aligned}$$

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

$$\cosh^2 x - \sinh^2 x = 1$$

$$\begin{aligned}\sin 2x &= 2 \sin x \cos x \\ \cos 2x &= \cos^2 x - \sin^2 x\end{aligned}$$

$$\begin{aligned}\sinh 2x &= 2 \sinh x \cosh x \\ \cosh 2x &= \cosh^2 x + \sinh^2 x\end{aligned}$$

$$\begin{aligned}\sin^2 \frac{x}{2} &= \frac{1 - \cos x}{2} \\ \cos^2 \frac{x}{2} &= \frac{1 + \cos x}{2}\end{aligned}$$

$$\begin{aligned}\sinh^2 \frac{x}{2} &= \frac{\cosh x - 1}{2} \\ \cosh^2 \frac{x}{2} &= \frac{\cosh x + 1}{2}\end{aligned}$$

$$\begin{aligned}\sin(x+y) &= \sin x \cos y + \cos x \sin y \\ \sin(x-y) &= \sin x \cos y - \cos x \sin y \\ \cos(x+y) &= \cos x \cos y - \sin x \sin y \\ \cos(x-y) &= \cos x \cos y + \sin x \sin y\end{aligned}$$

$$\begin{aligned}\sinh(x+y) &= \sinh x \cosh y + \cosh x \sinh y \\ \sinh(x-y) &= \sinh x \cosh y - \cosh x \sinh y \\ \cosh(x+y) &= \cosh x \cosh y + \sinh x \sinh y \\ \cosh(x-y) &= \cosh x \cosh y - \sinh x \sinh y\end{aligned}$$

$$\begin{aligned}\sin x + \sin y &= 2 \sin \frac{x+y}{2} \cos \frac{x-y}{2} \\ \sin x - \sin y &= 2 \cos \frac{x+y}{2} \sin \frac{x-y}{2} \\ \cos x + \cos y &= 2 \cos \frac{x+y}{2} \cos \frac{x-y}{2} \\ \cos x - \cos y &= -2 \sin \frac{x+y}{2} \sin \frac{x-y}{2}\end{aligned}$$

$$\begin{aligned}\sinh x + \sinh y &= 2 \sinh \frac{x+y}{2} \cosh \frac{x-y}{2} \\ \sinh x - \sinh y &= 2 \cosh \frac{x+y}{2} \sinh \frac{x-y}{2} \\ \cosh x + \cosh y &= 2 \cosh \frac{x+y}{2} \cosh \frac{x-y}{2} \\ \cosh x - \cosh y &= 2 \sinh \frac{x+y}{2} \sinh \frac{x-y}{2}\end{aligned}$$

$$\begin{aligned}\sin(ix) &= i \sinh x \\ \cos(ix) &= \cosh x\end{aligned}$$

$$\begin{aligned}\sin(x+iy) &= \sin x \cosh y + i \cos x \sinh y \\ \cos(x+iy) &= \cos x \cosh y - i \sin x \sinh y\end{aligned}$$

$$\begin{aligned}\sinh(x+iy) &= \sinh x \cos y + i \cosh x \sin y \\ \cosh(x+iy) &= \cosh x \cos y + i \sinh x \sin y\end{aligned}$$