

Trigonometrisiä kaavoja

$$(1) \quad \sin^2 x + \cos^2 x = 1$$

$$(2) \quad \begin{aligned} \sin\left(\frac{\pi}{2} - x\right) &= \cos x, \quad \cos\left(\frac{\pi}{2} - x\right) = \sin x, \\ \tan\left(\frac{\pi}{2} - x\right) &= \cot x, \quad \cot\left(\frac{\pi}{2} - x\right) = \tan x \end{aligned}$$

$$(3) \quad \begin{aligned} \sin(\pi - x) &= \sin x, \quad \cos(\pi - x) = \cos x, \\ \tan(\pi - x) &= -\tan x, \quad \cot(\pi - x) = -\cot x \end{aligned}$$

$$(4) \quad \begin{aligned} \sin(x \pm y) &= \sin x \cos y \pm \cos x \sin y, \\ \cos(x \pm y) &= \cos x \cos y \mp \sin x \sin y \end{aligned}$$

$$(5) \quad \begin{aligned} \tan(x \pm y) &= \frac{\tan x \pm \tan y}{1 \mp \tan x \tan y}, \\ \cot(x \pm y) &= \frac{\cot x \cot y \mp 1}{\cot y \pm \cot x} \end{aligned}$$

$$(6) \quad \begin{aligned} \sin 2x &= 2 \sin x \cos x, \\ \cos 2x &= \cos^2 x - \sin^2 x = 1 - 2 \sin^2 x = 2 \cos^2 x - 1, \\ \tan 2x &= \frac{2 \tan x}{1 - \tan^2 x}, \\ \cot 2x &= \frac{\cot^2 x - 1}{2 \cot x} \end{aligned}$$

$$(7) \quad \begin{aligned} \sin x \pm \sin y &= 2 \sin \frac{x \pm y}{2} \cos \frac{x \mp y}{2}, \\ \cos x + \cos y &= 2 \cos \frac{x+y}{2} \cos \frac{x-y}{2}, \\ \cos x - \cos y &= -2 \sin \frac{x+y}{2} \sin \frac{x-y}{2}. \end{aligned}$$

$$(8) \quad y = \overline{\arcsin} x, x \in [-1, 1] \Leftrightarrow \sin y = x, y \in [-\frac{\pi}{2}, \frac{\pi}{2}].$$

$$(9) \quad y = \overline{\arccos} x, x \in [-1, 1] \Leftrightarrow \cos y = x, y \in [0, \pi].$$

$$(10) \quad y = \overline{\arctan} x, x \in \mathbb{R} \Leftrightarrow \tan y = x, y \in] -\frac{\pi}{2}, \frac{\pi}{2}[.$$