

## Formules trigonométriques

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

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

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

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

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

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

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

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$$\sin\left(\frac{\pi}{2} - x\right) = \cos x$$

$$\sin\left(\frac{\pi}{2} + x\right) = \cos x$$

$$\cos\left(\frac{\pi}{2} - x\right) = \sin x$$

$$\cos\left(\frac{\pi}{2} + x\right) = -\sin x$$

$$\tan\left(\frac{\pi}{2} - x\right) = \cotan x$$

$$\tan\left(\frac{\pi}{2} + x\right) = -\cotan x$$

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

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

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

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

$$\tan(x + y) = \frac{\tan x + \tan y}{1 - \tan x \tan y}$$

$$\tan(x - y) = \frac{\tan x - \tan y}{1 + \tan x \tan y}$$

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

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

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

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

$$\tan 2x = \frac{2 \tan x}{1 - \tan^2 x}$$

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$$\sin 3x = 3 \sin x - 4 \sin^3 x$$

$$\cos 3x = -3 \cos x + 4 \cos^3 x$$

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$$\sin p + \sin q = 2 \sin \frac{p+q}{2} \cos \frac{p-q}{2}$$

$$\sin p - \sin q = 2 \sin \frac{p-q}{2} \cos \frac{p+q}{2}$$

$$\cos p + \cos q = 2 \cos \frac{p+q}{2} \cos \frac{p-q}{2}$$

$$\cos p - \cos q = -2 \sin \frac{p+q}{2} \sin \frac{p-q}{2}$$

$$\tan p + \tan q = \frac{\sin(p+q)}{\cos p \cos q}$$

$$\tan p - \tan q = \frac{\sin(p-q)}{\cos p \cos q}$$

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$$\sin x \cos y = \frac{1}{2} [\sin(x+y) + \sin(x-y)]$$

$$\cos x \cos y = \frac{1}{2} [\cos(x+y) + \cos(x-y)]$$

$$\sin x \sin y = \frac{1}{2} [\cos(x-y) - \cos(x+y)]$$

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