

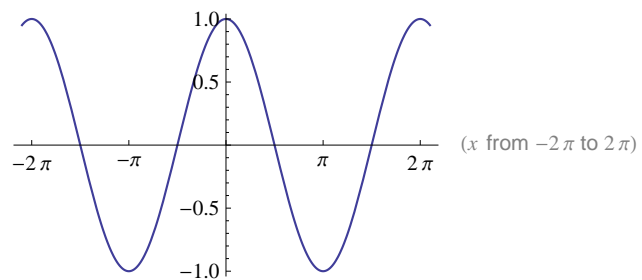
cos



Input:

$\cos(x)$

Plots:



Alternate form:

$$\frac{e^{-ix}}{2} + \frac{e^{ix}}{2}$$

Property:

Periodic in x with period 2π

Root:

$$x = \pi n - \frac{\pi}{2}, \quad n \in \mathbb{Z}$$

Series expansion at :x == 0:

$$1 - \frac{x^2}{2} + \frac{x^4}{24} - \frac{x^6}{720} + \mathcal{O}(x^7)$$

Derivative:

$$\frac{d}{dx}(\cos(x)) = -\sin(x)$$

Indefinite integral:

$$\int \cos(x) dx = \sin(x) + \text{constant}$$

Global maximum:

$$\max \{\cos(x)\} = 1 \quad \text{at } x = 0$$

Global minimum:

$$\min \{\cos(x)\} = -1 \quad \text{at } x = \pi$$

Alternative representations:

$$\cos(x) = \cosh(ix)$$

Series representations:

$$\cos(x) = \sum_{k=0}^{\infty} \frac{(-1)^k x^{2k}}{(2k)!}$$

Wolfram|Alpha: cos

Integral representations:

$$\cos(x) = 1 - x \int_0^1 \sin(tx) dt$$

Definite integral mean square:

$$\int_0^{2\pi} \frac{\cos^2(x)}{2\pi} dx = \frac{1}{2}$$