

LE PRINCIPALI FORMULE TRIGONOMETRICHE

dal 4 ottobre al 12 ottobre 2005

Programma, registro degli argomenti svolti e materiale relativo al corso possono essere reperiti in rete all'indirizzo <http://www.dm.unipi.it/didactics/home.html> ivi selezionando il nome del corso.

$$\sin^2 \alpha + \cos^2 \alpha = 1,$$

$$\sin(\alpha + \beta) = \sin \alpha \cos \beta + \cos \alpha \sin \beta, \quad \cos(\alpha + \beta) = \cos \alpha \cos \beta - \sin \alpha \sin \beta,$$

$$\text{Per } 0 < \alpha < \frac{\pi}{2}: \quad \sin \alpha < \alpha, \quad \cos \alpha \leq \frac{\sin \alpha}{\alpha} \leq 1,$$

$$\sin \alpha \cos \beta = \frac{\sin(\alpha+\beta) + \sin(\alpha-\beta)}{2}, \quad \sin \alpha \sin \beta = \frac{-\cos(\alpha+\beta) + \cos(\alpha-\beta)}{2}, \quad \cos \alpha \cos \beta = \frac{\cos(\alpha+\beta) + \cos(\alpha-\beta)}{2},$$

$$\sin \alpha + \sin \beta = 2 \sin \left(\frac{\alpha+\beta}{2} \right) \cos \left(\frac{\alpha-\beta}{2} \right), \quad \cos \alpha + \cos \beta = 2 \cos \left(\frac{\alpha+\beta}{2} \right) \cos \left(\frac{\alpha-\beta}{2} \right)$$

$$\cos \alpha - \cos \beta = -2 \sin \left(\frac{\alpha+\beta}{2} \right) \sin \left(\frac{\alpha-\beta}{2} \right), \quad \sin \alpha - \sin \beta = 2 \sin \left(\frac{\alpha+\beta}{2} \right) \sin \left(\frac{\alpha-\beta}{2} \right)$$

$$\cos^2 \frac{x}{2} = \frac{1+\cos x}{2}, \quad \sin^2 \frac{x}{2} = \frac{1-\cos x}{2}$$

$$\tan \alpha = \frac{\sin \alpha}{\cos \alpha}, \quad \cot \alpha = \frac{\cos \alpha}{\sin \alpha}$$

$$\arcsin x = \alpha, x \in [-1, 1] \Leftrightarrow \sin \alpha = x \text{ e } \alpha \in [-\pi/2, \pi/2],$$

$$\arccos x = \alpha, x \in [-1, 1] \Leftrightarrow \cos \alpha = x \text{ e } \alpha \in [0, \pi],$$

$$\arctan x = \alpha, x \in (-\infty, \infty) \Leftrightarrow \tan \alpha = x \text{ e } \alpha \in]-\pi/2, \pi/2[,$$

$$\sin x = \sin x_0 \Leftrightarrow x = x_0 + 2k\pi \text{ o } x = \pi - x_0 + 2k\pi = -x_0 + (2k+1)\pi,$$

$$\cos x = \cos x_0 \Leftrightarrow x = \pm x_0 + 2k\pi,$$

$$\tan x = \tan x_0 \Leftrightarrow x = x_0 + k\pi.$$
