LE PRINCIPALI FORMULE TRIGONOMETRICHE

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.

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

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

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

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

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

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

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

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

$\arcsin x = \alpha, x \in [-1, 1]$ sta per $\sin \alpha = x$ e $\alpha \in [-\pi/2, \pi/2],$

$\arccos x = \alpha, x \in [-1, 1]$ sta per $\cos \alpha = x$ e $\alpha \in [0, \pi],$

$\arctan x = \alpha, x \in (-\infty, \infty)$ sta per $\tan \alpha = x$ e $\alpha \in]-\pi/2, \pi/2[,$

$\sin x = \sin x_0$ equivale a $x = x_0 + 2k\pi$ o $x = \pi - x_0 + 2k\pi = -x_0 + (2k+1)\pi,$

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

$\tan x = \tan x_0$ equivale a $x = x_0 + k\pi.$
