

FORMULE TRIGONOMETRICHE DI BASE

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

ARCHI ASSOCIATI

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

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

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

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

$$\sin(\pi - \alpha) = \sin \alpha$$

$$\cos(\pi - \alpha) = -\cos \alpha$$

$$\sin(\pi + \alpha) = -\sin \alpha$$

$$\cos(\pi + \alpha) = -\cos \alpha$$

$$\sin\left(\frac{3\pi}{2} - \alpha\right) = -\cos \alpha$$

$$\cos\left(\frac{3\pi}{2} - \alpha\right) = -\sin \alpha$$

$$\sin\left(\frac{3\pi}{2} + \alpha\right) = -\cos \alpha$$

$$\cos\left(\frac{3\pi}{2} + \alpha\right) = \sin \alpha$$

$$\sin(-\alpha) = -\sin \alpha$$

$$\cos(-\alpha) = \cos \alpha$$

SOMMAZIONE PER ARCHI

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

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

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

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

$$\tan(\alpha + \beta) = \frac{\tan(\alpha) + \tan(\beta)}{1 - \tan(\alpha) \tan(\beta)}$$

$$\tan(\alpha - \beta) = \frac{\tan(\alpha) - \tan(\beta)}{1 + \tan(\alpha) \tan(\beta)}$$

$\sin x \in \mathbb{R}$

$\cos \alpha, \beta, \alpha + \beta \neq \frac{\pi}{2} + k\pi$

$\cos \alpha, \beta, \alpha - \beta \neq \frac{\pi}{2} + k\pi$

FORMULE DI PLICAZIONE

$$t = \tan\left(\frac{\alpha}{2}\right)$$

$$\sin(\alpha) = \frac{2t}{1+t^2}$$

$$\alpha \neq \pi + 2k\pi$$

$$\cos(\alpha) = \frac{1-t^2}{1+t^2}$$

$$\alpha \neq \pi + 2k\pi$$

$$\tan(\alpha) = \frac{2t}{1-t^2}$$

$$\alpha \neq \frac{\pi}{2} + k\pi \quad \text{e} \quad \alpha \neq \pi + 2k\pi$$

FORMULE DI SEZIONE

$$\sin\left(\frac{\alpha}{2}\right) = \pm \sqrt{\frac{1-\cos(\alpha)}{2}}$$

$$\cos\left(\frac{\alpha}{2}\right) = \pm \sqrt{\frac{1+\cos(\alpha)}{2}}$$

$$\tan\left(\frac{\alpha}{2}\right) = \pm \sqrt{\frac{1-\cos(\alpha)}{1+\cos(\alpha)}}$$

$$\alpha \neq \pi + 2k\pi$$

WERNER

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

$$\cos \alpha \cos \beta = \frac{1}{2} [\cos(\alpha - \beta) + \cos(\alpha + \beta)]$$

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

PROSTAFERESI

$$\sin \alpha + \sin \beta = 2 \sin\left(\frac{\alpha + \beta}{2}\right) \cos\left(\frac{\alpha - \beta}{2}\right) \quad \left| \begin{array}{l} \cos \alpha + \cos \beta = 2 \cos\left(\frac{\alpha + \beta}{2}\right) \cos\left(\frac{\alpha - \beta}{2}\right) \end{array} \right.$$

$$\sin \alpha - \sin \beta = 2 \cos\left(\frac{\alpha + \beta}{2}\right) \sin\left(\frac{\alpha - \beta}{2}\right) \quad \left| \begin{array}{l} \cos \alpha - \cos \beta = -2 \sin\left(\frac{\alpha + \beta}{2}\right) \sin\left(\frac{\alpha - \beta}{2}\right) \end{array} \right.$$