

Departamento de Matemática Aplicada I
Fórmulas de Trigonometría

Pitágoras y relacionados

$$\begin{aligned}\cos^2 \alpha + \sin^2 \alpha &= 1 \\ 1 + \tan^2 \alpha &= \sec^2 \alpha \\ \operatorname{ctg}^2 \alpha + 1 &= \operatorname{cosec}^2 \alpha\end{aligned}$$

Correlaciones

$$\alpha + \beta = \frac{\pi}{2} \quad (\text{Complementarios}) \quad \begin{aligned}\sin\left(\frac{\pi}{2} - \alpha\right) &= \cos \alpha \\ \cos\left(\frac{\pi}{2} - \alpha\right) &= \sin \alpha\end{aligned}$$

$$\beta - \alpha = \frac{\pi}{2} \quad \begin{aligned}\sin\left(\frac{\pi}{2} + \alpha\right) &= \cos \alpha \\ \cos\left(\frac{\pi}{2} + \alpha\right) &= -\sin \alpha\end{aligned}$$

$$\alpha + \beta = \pi \quad (\text{Suplementarios}) \quad \begin{aligned}\sin(\pi - \alpha) &= \sin \alpha \\ \cos(\pi - \alpha) &= -\cos \alpha\end{aligned}$$

$$\beta - \alpha = \pi \quad \begin{aligned}\sin(\pi + \alpha) &= -\sin \alpha \\ \cos(\pi + \alpha) &= -\cos \alpha\end{aligned}$$

$$\alpha + \beta = 2\pi \quad (\text{Opuestos}) \quad \begin{aligned}\sin(-\alpha) &= -\sin \alpha \\ \cos(-\alpha) &= \cos \alpha\end{aligned}$$

Fórmulas de adición

$$\begin{aligned}\sin(\alpha + \beta) &= \sin \alpha \cos \beta + \cos \alpha \sin \beta \\ \cos(\alpha + \beta) &= \cos \alpha \cos \beta - \sin \alpha \sin \beta \\ \tan(\alpha + \beta) &= \frac{\tan \alpha + \tan \beta}{1 - \tan \alpha \tan \beta}\end{aligned}$$

$$\begin{aligned}\sin(\alpha - \beta) &= \sin \alpha \cos \beta - \cos \alpha \sin \beta \\ \cos(\alpha - \beta) &= \cos \alpha \cos \beta + \sin \alpha \sin \beta \\ \tan(\alpha - \beta) &= \frac{\tan \alpha - \tan \beta}{1 + \tan \alpha \tan \beta}\end{aligned}$$

Fórmulas del ángulo doble

$$\begin{aligned}\sin 2\alpha &= 2 \sin \alpha \cos \alpha \\ \cos 2\alpha &= \cos^2 \alpha - \sin^2 \alpha \\ \tan 2\alpha &= \frac{2 \tan \alpha}{1 - \tan^2 \alpha}\end{aligned}$$

Fórmulas del ángulo mitad

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

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

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