

# Formulario Trigonometría

1.  $\csc(\alpha) = \frac{1}{\sin(\alpha)}$
2.  $\sec(\alpha) = \frac{1}{\cos(\alpha)}$
3.  $\tan(\alpha) = \frac{\sin(\alpha)}{\cos(\alpha)} = \frac{1}{\cot(\alpha)}$
4.  $\cot(\alpha) = \frac{\cos(\alpha)}{\sin(\alpha)} = \frac{1}{\tan(\alpha)}$
5.  $\sin^2(\alpha) + \cos^2(\alpha) = 1$
6.  $1 + \tan^2(\alpha) = \sec^2(\alpha)$
7.  $1 + \cot^2(\alpha) = \csc^2(\alpha)$
8.  $\sin(\alpha \pm \beta) = \sin(\alpha)\cos(\beta) \pm \sin(\beta)\cos(\alpha)$
9.  $\cos(\alpha \pm \beta) = \cos(\alpha)\cos(\beta) \mp \sin(\beta)\sin(\alpha)$
10.  $\tan(\alpha \pm \beta) = \frac{\tan(\alpha) \pm \tan(\beta)}{1 \mp \tan(\alpha)\tan(\beta)}$
11.  $\cot(\alpha \pm \beta) = \frac{1 \mp \cot(\alpha)\cot(\beta)}{\cot(\alpha) \pm \cot(\beta)}$
12.  $\sin(2\alpha) = 2\sin(\alpha)\cos(\alpha)$
13.  $\cos(2\alpha) = \cos^2(\alpha) - \sin^2(\alpha) = 2\cos^2(\alpha) - 1 = 1 - 2\sin^2(\alpha)$
14.  $\tan(2\alpha) = \frac{2\tan(\alpha)}{1 - \tan^2(\alpha)}$
15.  $\sin\left(\frac{\alpha}{2}\right) = \pm \sqrt{\frac{1 - \cos(\alpha)}{2}}$
16.  $\cos\left(\frac{\alpha}{2}\right) = \pm \sqrt{\frac{1 + \cos(\alpha)}{2}}$
17.  $\tan\left(\frac{\alpha}{2}\right) = \pm \sqrt{\frac{1 - \cos(\alpha)}{1 + \cos(\alpha)}}$
18.  $\sin(\alpha) + \sin(\beta) = 2\sin\left(\frac{\alpha + \beta}{2}\right)\cos\left(\frac{\alpha - \beta}{2}\right)$
19.  $\cos(\alpha) + \cos(\beta) = 2\cos\left(\frac{\alpha + \beta}{2}\right)\cos\left(\frac{\alpha - \beta}{2}\right)$
20.  $\sin(\alpha) - \sin(\beta) = 2\cos\left(\frac{\alpha + \beta}{2}\right)\sin\left(\frac{\alpha - \beta}{2}\right)$
21.  $\cos(\alpha) - \cos(\beta) = -2\sin\left(\frac{\alpha + \beta}{2}\right)\sin\left(\frac{\alpha - \beta}{2}\right)$
22.  $\tan(\alpha) \pm \tan(\beta) = \frac{\sin(\alpha \pm \beta)}{\cos(\alpha)\cos(\beta)}$
23.  $\cot(\alpha) \pm \cot(\beta) = \frac{\sin(\alpha \pm \beta)}{\sin(\alpha)\sin(\beta)}$
24.  $\sin(\alpha)\sin(\beta) = \frac{1}{2}(\cos(\alpha - \beta) - \cos(\alpha + \beta))$
25.  $\sin(\alpha)\cos(\beta) = \frac{1}{2}(\sin(\alpha + \beta) + \sin(\alpha - \beta))$
26.  $\cos(\alpha)\cos(\beta) = \frac{1}{2}(\cos(\alpha - \beta) + \cos(\alpha + \beta))$

$$\mathbf{27.} \quad \tan(\alpha) \tan(\beta) = \frac{\tan(\alpha) + \tan(\beta)}{\cot(\alpha) + \cot(\beta)}$$

$$\mathbf{28.} \quad \cot(\alpha) \cot(\beta) = \frac{\cot(\alpha) + \cot(\beta)}{\tan(\alpha) + \tan(\beta)}$$