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# Resumen Identidades Trigonométricas

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(a) $\cos(\theta), sen(\theta) \in [-1,1], \forall \theta \in \mathbb{R}$

(b) $cos^2(\theta) + sen^2(\theta) = 1, \forall \theta \in \mathbb{R}$

(c) $\tan(\theta) = \frac{sen(\theta)}{\cos(\theta)}$ ; $\cot(\theta) = \frac{\cos(\theta)}{sen(\theta)}$

(d) $sen(\alpha \pm \beta) = sen(\alpha)\cos(\beta) \pm sen(\beta)\cos(\alpha)$

(e) $\cos(\alpha \pm \beta) = \cos(\alpha)\cos(\beta) \mp sen(\alpha)sen(\beta)$

(f) $tan(\alpha \pm \beta) = \frac{\tan(\alpha) \pm \tan(\beta)}{1 \mp \tan(\alpha)\tan(\beta)}$

(g) $\sec(\theta) = \frac{1}{\cos(\theta)}$; $\csc(\theta) = \frac{1}{sen(\theta)}$

(h) $1 + tan^2(\theta) = sec^2(\theta)$ ; $1 + cot^2(\theta) = csc^2(\theta)$

(i) $sen(2\theta) = 2sen(\theta)\cos(\theta)$

(j) $\cos(2\theta) = cos^2(\theta) - sen^2(\theta)$

(k) $\tan(2\theta) = \frac{2\tan(\theta)}{1 - tan^2(\theta)}$

(l) $sen^2(\theta) = \frac{1-\cos(2\theta)}{2}$ ; $cos^2(\theta) = \frac{1+\cos(2\theta)}{2}$ ; $tan^2(\theta) = \frac{1-\cos(\theta)}{1+\cos(\theta)}$

(m) $sen(\alpha) \pm sen(\beta) = 2sen\left(\frac{\alpha \pm \beta}{2}\right)\cos\left(\frac{\alpha \mp \beta}{2}\right)$

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

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

(p) $\tan(\alpha) \pm \tan(\beta) = \frac{sen(\alpha \pm \beta)}{\cos(\alpha)\cos(\beta)}$

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

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

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

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

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