

FORMULE DI ADDIZIONE E SOTTRAZIONE

$$\text{sen}(\alpha + \beta) = \text{sen}(\alpha)\cos(\beta) + \cos(\alpha)\text{sen}(\beta)$$

$$\text{sen}(\alpha - \beta) = \text{sen}(\alpha)\cos(\beta) - \cos(\alpha)\text{sen}(\beta)$$

$$\cos(\alpha + \beta) = \cos(\alpha)\cos(\beta) - \text{sen}(\alpha)\text{sen}(\beta)$$

$$\cos(\alpha - \beta) = \cos(\alpha)\cos(\beta) + \text{sen}(\alpha)\text{sen}(\beta)$$

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

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

FORMULE DI DUPLICAZIONE E TRIPLICAZIONE

$$\text{sen}(2\alpha) = 2\text{sen}(\alpha)\cos(\alpha)$$

$$\text{sen}(3\alpha) = 3\text{sen}(\alpha) - 4\text{sen}^3(\alpha)$$

$$\cos(2\alpha) = \cos^2(\alpha) - \text{sen}^2(\alpha)$$

$$\cos(3\alpha) = 4\cos^3(\alpha) - 3\cos(\alpha)$$

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

$$\tan(3\alpha) = \frac{3\tan(\alpha) - \tan^3(\alpha)}{1 - 3\tan^2(\alpha)}$$

FORMULE DI BISEZIONE

$$\text{sen}^2\left(\frac{\alpha}{2}\right) = \frac{1 - \cos(\alpha)}{2}$$

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

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

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

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

FORMULE PARAMETRICHE

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

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

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

$$\text{con } t = \tan \frac{\alpha}{2}$$

FORMULE DI PROSTAFERESI

$$\text{sen}(p) + \text{sen}(q) = 2\text{sen}\left(\frac{p+q}{2}\right)\cos\left(\frac{p-q}{2}\right)$$

$$\text{sen}(p) - \text{sen}(q) = 2\text{sen}\left(\frac{p-q}{2}\right)\cos\left(\frac{p+q}{2}\right)$$

$$\cos(p) + \cos(q) = 2\cos\left(\frac{p+q}{2}\right)\cos\left(\frac{p-q}{2}\right)$$

$$\cos(p) - \cos(q) = -2\text{sen}\left(\frac{p+q}{2}\right)\text{sen}\left(\frac{p-q}{2}\right)$$

$$\tan(p) + \tan(q) = \frac{\text{sen}(p+q)}{\cos(p)\cos(q)}$$

FORMULE DI WERNER

$$\text{sen}(\alpha)\text{sen}(\beta) = \frac{\cos(\alpha - \beta) - \cos(\alpha + \beta)}{2}$$

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

$$\text{sen}(\alpha)\cos(\beta) = \frac{\text{sen}(\alpha + \beta) + \text{sen}(\alpha - \beta)}{2}$$