

FORMULE TRIGONOMETRICHE

$$\begin{aligned}\cos(x-y) &= \cos(x)\cos(y) + \sin(x)\sin(y) \\ \cos(x+y) &= \cos(x)\cos(y) - \sin(x)\sin(y) \\ \sin(x+y) &= \sin(x)\cos(y) + \cos(x)\sin(y) \\ \sin(x-y) &= \sin(x)\cos(y) - \cos(x)\sin(y)\end{aligned}$$

$$\tan(x+y) = \frac{\tan(x)+\tan(y)}{1-\tan(x)\tan(y)}$$

$$\tan(x-y) = \frac{\tan(x)-\tan(y)}{1+\tan(x)\tan(y)}$$

$$\begin{aligned}\sin(2x) &= 2\sin(x)\cos(x) \\ \cos(2x) &= \cos^2(x) - \sin^2(x) \\ \cos(2x) &= 1 - 2\sin^2(x) \\ \cos(2x) &= 2\cos^2(x) - 1\end{aligned}$$

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

$$\cos(x) = \frac{1-t^2}{1+t^2} \quad \sin(x) = \frac{2t}{1+t^2} \quad \tan(x) = \frac{2t}{1-t^2} \quad t = \tan\left(\frac{x}{2}\right) \quad dx = \frac{2dt}{1+t^2}$$

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

$$\begin{aligned}\sin^2(x) &= \frac{1-\cos(2x)}{2} & \cos^2(x) &= \frac{1+\cos(2x)}{2} \\ 2\sin^2\left(\frac{x}{2}\right) &= 1-\cos(2x) & 2\cos^2\left(\frac{x}{2}\right) &= 1+\cos(2x)\end{aligned}$$

$$\sin(x) = \frac{\sin \pi x}{\pi x}$$

$$\cos^2(x) = \frac{1}{1+t^2} \quad \sin^2(x) = \frac{t^2}{1+t^2} \quad \sin(x)\cos(x) = \frac{t}{1+t^2} \quad dx = \frac{dt}{1+t^2} \quad t = \tan(x)$$

Formule di Prostaferesi

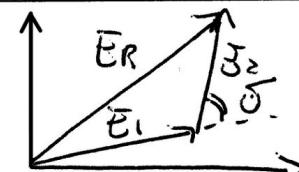
$$\begin{aligned}\sin(x) + \sin(y) &= 2 \sin\left(\frac{x+y}{2}\right) \cos\left(\frac{x-y}{2}\right) & \sin(x) - \sin(y) &= 2 \cos\left(\frac{x+y}{2}\right) \sin\left(\frac{x-y}{2}\right) \\ \cos(x) + \cos(y) &= 2 \cos\left(\frac{x+y}{2}\right) \cos\left(\frac{x-y}{2}\right) & \cos(x) - \cos(y) &= -2 \sin\left(\frac{x+y}{2}\right) \sin\left(\frac{x-y}{2}\right)\end{aligned}$$

$$\begin{aligned}\sin(x)\sin(y) &= \frac{1}{2}(\cos(x-y) - \cos(x+y)) & \cos(x)\cos(y) &= \frac{1}{2}(\cos(x+y) + \cos(x-y)) \\ \sin(x)\cos(y) &= \frac{1}{2}(\sin(x+y) + \sin(x-y))\end{aligned}$$

Formule di Eulero

$$e^{ix} = \cos(x) + i\sin(x) \quad e^{-ix} = \cos(x) - i\sin(x)$$

$$\cos(x) = \frac{e^{ix} + e^{-ix}}{2} \quad \sin(x) = \frac{e^{ix} - e^{-ix}}{2i}$$



$$E_R = \sqrt{E_1^2 + E_2^2 + 2E_1 E_2 \cos S}$$

$$a \cos x + b \sin x = \sqrt{a^2 + b^2} \cdot \cos\left(x - \theta \arctan \frac{b}{a}\right) = A \cdot \cos(x - \varphi)$$