Tabelle riassuntive delle
FORMULE GONIOMETRICHE

x misura in radianti	x misura in gradi	sin(x)	cos(x)	tg(x)	ctg(x)
0	**0 °**	**0**	**1**	**0**	**non esiste**
$\pi/12$	15°	$\dfrac{\sqrt{6}-\sqrt{2}}{4}$	$\dfrac{\sqrt{6}+\sqrt{2}}{4}$	$2-\sqrt{3}$	$2+\sqrt{3}$
$\pi/8$	22°30'	$\dfrac{\sqrt{2-\sqrt{2}}}{2}$	$\dfrac{\sqrt{2+\sqrt{2}}}{2}$	$\sqrt{2}-1$	$\sqrt{2}+1$
$\pi/6$	**30°**	$\dfrac{1}{2}$	$\dfrac{\sqrt{3}}{2}$	$\dfrac{\sqrt{3}}{3}$	$\sqrt{3}$
$\pi/4$	**45°**	$\dfrac{\sqrt{2}}{2}$	$\dfrac{\sqrt{2}}{2}$	**1**	**1**
$\pi/3$	**60°**	$\dfrac{\sqrt{3}}{2}$	$\dfrac{1}{2}$	$\sqrt{3}$	$\dfrac{\sqrt{3}}{3}$
$3/8\pi$	67°30'	$\dfrac{\sqrt{2+\sqrt{2}}}{2}$	$\dfrac{\sqrt{2-\sqrt{2}}}{2}$	$\sqrt{2}+1$	$\sqrt{2}-1$
$5/12\pi$	75°	$\dfrac{\sqrt{6}+\sqrt{2}}{4}$	$\dfrac{\sqrt{6}-\sqrt{2}}{4}$	$2+\sqrt{3}$	$2-\sqrt{3}$
$\pi/2$	**90°**	**1**	**0**	**non esiste**	**0**

ARCHI ASSOCIATI

misura dell'arco	sin( )	cos()	tg()	ctg()
x	sinx	cosx	tgx	ctgx
π-x	sinx	-cosx	-tgx	-ctgx
π+x	-sinx	-cosx	tgx	ctgx
-x	-sinx	cosx	-tgx	-ctgx
2π-x	-sinx	cosx	-tgx	-ctgx
$\pi/2$-x	cosx	sinx	ctgx	tgx
$\pi/2$+x	cosx	-sinx	-ctgx	-tgx
3/2π+x	-cosx	sinx	-ctgx	-tgx
3/2π-x	-cosx	-sinx	ctgx	tgx

ADDIZIONE E SOTTRAZIONE

$$sin(\alpha+\beta)=sin(\alpha)cos(\beta)+cos(\alpha)sin(\beta)$$
$$sin(\alpha-\beta)=sin(\alpha)cos(\beta)-cos(\alpha)sin(\beta)$$
$$cos(\alpha+\beta)=cos(\alpha)cos(\beta)-sin(\alpha)sin(\beta)$$
$$cos(\alpha-\beta)=cos(\alpha)cos(\beta)+sin(\alpha)sin(\beta)$$
$$tg(\alpha+\beta)=\frac{tg(\alpha)+tg(\beta)}{1-tg(\alpha)tg(\beta)}$$
$$tg(\alpha-\beta)=\frac{tg(\alpha)-tg(\beta)}{1+tg(\alpha)tg(\beta)}$$
$$ctg(\alpha+\beta)=\frac{ctg(\alpha)ctg(\beta)-1}{ctg(\alpha)+ctg(\beta)}$$
$$ctg(\alpha-\beta)=\frac{ctg(\alpha)ctg(\beta)+1}{ctg(\alpha)-ctg(\beta)}$$

DUPLICAZIONE

$$sin(2\alpha)=2sin(\alpha)cos(\alpha)$$
$$cos(2\alpha)=cos^2(\alpha)-sin^2(\alpha)$$
$$tg(2\alpha)=\frac{2tg(\alpha)}{1-tg^2(\alpha)}$$
$$ctg(2\alpha)=\frac{ctg^2(\alpha)-1}{2ctg(\alpha)}$$

BISEZIONE

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

$$tg\left(\frac{\alpha}{2}\right)=\begin{cases}\dfrac{sin(\alpha)}{1+cos(\alpha)}(\alpha\neq\pi+2k\pi)\\[2mm]\dfrac{1-cos(\alpha)}{sin(\alpha)}(\alpha\neq k\pi)\end{cases}$$

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

$$ctg\left(\frac{\alpha}{2}\right)=\begin{cases}\dfrac{1+cos(\alpha)}{sin(\alpha)}(\alpha\neq k\pi)\\[2mm]\dfrac{sin(\alpha)}{1-cos(\alpha)}(\alpha\neq\pi+2k\pi)\end{cases}$$

Prostaferesi

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

Werner

$$sin(\alpha)sin(\beta)=\frac{1}{2}\left(cos(\alpha-\beta)-cos(\alpha+\beta)]\right.$$
$$cos(\alpha)sin(\beta)=\frac{1}{2}[sin(\alpha+\beta)-sin(\alpha-\beta)]$$
$$cos(\alpha)cos(\beta)=\frac{1}{2}[cos(\alpha+\beta)+cos(\alpha-\beta)]$$

Parametriche

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

Relazioni fondamentali

$$sin^2 x+cos^2 x=1 \qquad tgx=\frac{sinx}{cos\,x}\quad\forall x\neq\frac{\pi}{2}+k\pi$$
$$ctgx=\frac{cos\,x}{sinx}\quad\forall x\neq k\pi \qquad ctgx=\frac{1}{tgx}\quad\forall x\neq k\frac{\pi}{2}$$