Formule di Trigonometria

$$\boxed{\sin^2\alpha+\cos^2\alpha=1} \qquad \sin\alpha=\pm\sqrt{1-\cos^2\alpha} \qquad \cos\alpha=\pm\sqrt{1-\sin^2\alpha}$$

$$\cos\alpha=\pm\frac{1}{\sqrt{1+\tan^2\alpha}} \qquad \sin\alpha=\pm\frac{\tan\alpha}{\sqrt{1+\tan^2\alpha}}$$

α	α	sinα	cosα	tanα	cotα
0°	0	0	1	0	∞
30°	$\frac{\pi}{6}$	$\frac{1}{2}$	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{3}}{3}$	$\sqrt{3}$
45°	$\frac{\pi}{4}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{2}}{2}$	1	1
60°	$\frac{\pi}{3}$	$\frac{\sqrt{3}}{2}$	$\frac{1}{2}$	$\sqrt{3}$	$\frac{\sqrt{3}}{3}$
90°	$\frac{\pi}{2}$	1	0	∞	0

Formule di addizione

$$\cos(\alpha-\beta)=\cos\alpha\cos\beta+\sin\alpha\sin\beta$$
$$\cos(\alpha+\beta)=\cos\alpha\cos\beta-\sin\alpha\sin\beta$$

$$\sin(\alpha-\beta)=\sin\alpha\cos\beta-\sin\beta\cos\alpha$$
$$\sin(\alpha+\beta)=\sin\alpha\cos\beta+\sin\beta\cos\alpha$$

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

Formule di duplicazione

$$\sin 2\alpha=2\sin\alpha\cos\alpha$$

$$\cos 2\alpha=\begin{cases}\cos^2\alpha-\sin^2\alpha\\ 2\cos^2\alpha-1\\ 1-2\sin^2\alpha\end{cases}$$

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

Formule parametriche

$$\left.\begin{aligned}\sin\alpha&=\frac{2t}{1+t^2}\\ \cos\alpha&=\frac{1-t^2}{1+t^2}\\ \tan\alpha&=\frac{2t}{1-t^2}\end{aligned}\right\} \quad \left(t=\tan\frac{\alpha}{2}\right)$$

Formule di prostaferesi

$$\sin p+\sin q=2\sin\frac{p+q}{2}\cos\frac{p-q}{2}$$
$$\sin p-\sin q=2\sin\frac{p-q}{2}\cos\frac{p+q}{2}$$
$$\cos p+\cos q=2\cos\frac{p+q}{2}\cos\frac{p-q}{2}$$
$$\cos p-\cos q=-2\sin\frac{p+q}{2}\sin\frac{p-q}{2}$$

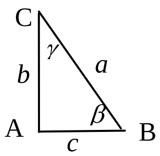
Formule di bisezione

$$\sin\frac{\alpha}{2}=\pm\sqrt{\frac{1-\cos\alpha}{2}}$$
$$\cos\frac{\alpha}{2}=\pm\sqrt{\frac{1+\cos\alpha}{2}}$$
$$\tan\frac{\alpha}{2}=\begin{cases}\sqrt{\dfrac{1-\cos\alpha}{1+\cos\alpha}}\\ \dfrac{1-\cos\alpha}{\sin\alpha}\\ \dfrac{\sin\alpha}{1+\cos\alpha}\end{cases}$$

Formule di triplicazione

$$\sin 3\alpha=3\sin\alpha-4\sin^3\alpha$$
$$\cos 3\alpha=4\cos^3\alpha-3\cos\alpha$$

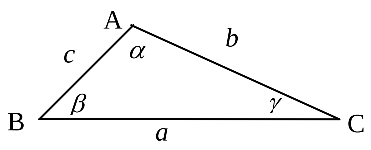
Triangoli rettangoli



$$b=a\sin\beta=a\cos\gamma=c\tan\beta$$
$$a=\frac{b}{\sin\beta}=\frac{b}{\cos\gamma}\ ;\ \tan\beta=\frac{b}{c}$$

$$c=a\sin\gamma=a\cos\beta=b\tan\gamma$$
$$a=\frac{c}{\sin\gamma}=\frac{c}{\cos\beta}\ ;\ \tan\gamma=\frac{c}{b}$$

Triangoli qualunque



$$\frac{a}{\sin\alpha}=\frac{b}{\sin\beta}=\frac{c}{\sin\gamma}$$

$$a^2=b^2+c^2-2bc\cos\alpha$$
$$b^2=a^2+c^2-2ac\cos\beta$$
$$c^2=a^2+b^2-2ab\cos\gamma$$

$$Area(\mathrm{ABC})=\frac{1}{2}bc\sin\alpha=\frac{1}{2}ac\sin\beta=\frac{1}{2}ab\sin\gamma$$