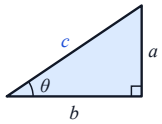
# Formule trigonometriche

coddy.tech/math/it/formulas/trigonometry

## RAPPORTI TRIGONOMETRICI

### Seno, coseno e tangente

$$\sin\theta = \frac{a}{c}$$
$$\cos\theta = \frac{b}{c}$$
$$\tan\theta = \frac{a}{b}$$




$a$ cateto opposto
$b$ cateto adiacente
$c$ ipotenusa

### Identità reciproche

$$\csc\theta = \frac{1}{\sin\theta}$$
$$\sec\theta = \frac{1}{\cos\theta}$$
$$\cot\theta = \frac{1}{\tan\theta}$$

### Identità del quoziente

$$\tan\theta = \frac{\sin\theta}{\cos\theta}$$
$$\cot\theta = \frac{\cos\theta}{\sin\theta}$$

### Angoli notevoli

| Angolo | sin | cos | tan |
|---|---|---|---|
| **0°** | $0$ | $1$ | $0$ |
| **30°** $\frac{\pi}{6}$ | $\frac{1}{2}$ | $\frac{\sqrt{3}}{2}$ | $\frac{\sqrt{3}}{3}$ |
| **45°** $\frac{\pi}{4}$ | $\frac{\sqrt{2}}{2}$ | $\frac{\sqrt{2}}{2}$ | $1$ |
| **60°** $\frac{\pi}{3}$ | $\frac{\sqrt{3}}{2}$ | $\frac{1}{2}$ | $\sqrt{3}$ |
| **90°** $\frac{\pi}{2}$ | $1$ | $0$ | — |

## IDENTITÀ

### Identità pitagoriche

$$\sin^2\theta + \cos^2\theta = 1$$
$$1 + \tan^2\theta = \sec^2\theta$$
$$1 + \cot^2\theta = \csc^2\theta$$

### Parità

$$\sin(-\theta) = -\sin\theta$$
$$\cos(-\theta) = \cos\theta$$
$$\tan(-\theta) = -\tan\theta$$

### Angoli complementari

$$\sin(90^\circ - \theta) = \cos\theta$$
$$\cos(90^\circ - \theta) = \sin\theta$$
$$\tan(90^\circ - \theta) = \cot\theta$$

## FORMULE DEGLI ANGOLI

### Formule di addizione e sottrazione

$$\sin(A \pm B) = \sin A\cos B \pm \cos A\sin B$$
$$\cos(A \pm B) = \cos A\cos B \mp \sin A\sin B$$
$$\tan(A \pm B) = \frac{\tan A \pm \tan B}{1 \mp \tan A\tan B}$$

### Formule di duplicazione

$$\sin 2\theta = 2\sin\theta\cos\theta$$
$$\cos 2\theta = \cos^2\theta - \sin^2\theta$$
$$\cos 2\theta = 2\cos^2\theta - 1 = 1 - 2\sin^2\theta$$
$$\tan 2\theta = \frac{2\tan\theta}{1 - \tan^2\theta}$$

### Formule di bisezione

$$\sin\frac{\theta}{2} = \pm\sqrt{\frac{1-\cos\theta}{2}}$$
$$\cos\frac{\theta}{2} = \pm\sqrt{\frac{1+\cos\theta}{2}}$$
$$\tan\frac{\theta}{2} = \frac{1-\cos\theta}{\sin\theta} = \frac{\sin\theta}{1+\cos\theta}$$

### Formule di linearizzazione

$$\sin^2\theta = \frac{1-\cos 2\theta}{2}$$
$$\cos^2\theta = \frac{1+\cos 2\theta}{2}$$

### Formule di Werner

$$\sin A\sin B = \tfrac{1}{2}[\cos(A-B) - \cos(A+B)]$$
$$\cos A\cos B = \tfrac{1}{2}[\cos(A-B) + \cos(A+B)]$$
$$\sin A\cos B = \tfrac{1}{2}[\sin(A+B) + \sin(A-B)]$$

### Formule di prostaferesi

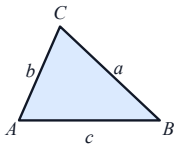
$$\sin A + \sin B = 2\sin\frac{A+B}{2}\cos\frac{A-B}{2}$$
$$\sin A - \sin B = 2\cos\frac{A+B}{2}\sin\frac{A-B}{2}$$
$$\cos A + \cos B = 2\cos\frac{A+B}{2}\cos\frac{A-B}{2}$$
$$\cos A - \cos B = -2\sin\frac{A+B}{2}\sin\frac{A-B}{2}$$

## TRIANGOLI

### Teorema dei seni

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

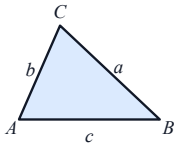
$A, B, C$ angoli
$a, b, c$ i lati opposti




### Teorema del coseno

$$c^2 = a^2 + b^2 - 2ab\cos C$$

$A, B, C$ angoli
$a, b, c$ i lati opposti




### Area di un triangolo

AREA
$$A = \tfrac{1}{2}ab\sin C$$

$C$ l'angolo tra i lati a e b

## RADIANTI E GRAFICI

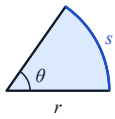
### Radianti, archi e settori

$$180^\circ = \pi \text{ rad}$$

DA GRADI A RADIANTI
$$\theta_{\text{rad}} = \theta^\circ \cdot \frac{\pi}{180^\circ}$$

LUNGHEZZA DELL'ARCO
$$s = r\theta$$

AREA DEL SETTORE
$$A = \tfrac{1}{2}r^2\theta$$




$r$ raggio  $\theta$ angolo in radianti
$s$ lunghezza dell'arco

### Grafici di seno e coseno

$$y = A\sin(Bx - C) + D$$

AMPIEZZA
$$|A|$$

PERIODO
$$\frac{2\pi}{|B|}$$

SFASAMENTO
$$\frac{C}{B}$$

LINEA MEDIA
$$y = D$$