

Funções básicas de Trigonometria

Função	Abreviatura	Identidade trigonométrica
Seno	sen (ou sin)	$\sin \theta \equiv \cos\left(\frac{\pi}{2} - \theta\right) \equiv \frac{1}{\csc \theta}$
Cosseno	cos	$\cos \theta \equiv \sin\left(\frac{\pi}{2} - \theta\right) \equiv \frac{1}{\sec \theta}$
Tangente	tan (ou tg)	$\tan \theta \equiv \frac{\sin \theta}{\cos \theta} \equiv \cot\left(\frac{\pi}{2} - \theta\right) \equiv \frac{1}{\cot \theta}$
Cossecante	csc (ou cosec)	$\csc \theta \equiv \sec\left(\frac{\pi}{2} - \theta\right) \equiv \frac{1}{\sin \theta}$
Secante	sec	$\sec \theta \equiv \csc\left(\frac{\pi}{2} - \theta\right) \equiv \frac{1}{\cos \theta}$
Cotangente	cot (ou ctg ou ctn)	$\cot \theta \equiv \frac{\cos \theta}{\sin \theta} \equiv \tan\left(\frac{\pi}{2} - \theta\right) \equiv \frac{1}{\tan \theta}$

Algumas correspondências em trigonometria

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

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

$$\cos^2 \theta + \sin^2 \theta = 1$$

$$1 + \tan^2 \theta = \sec^2 \theta$$

$$1 + \cot^2 \theta = \csc^2 \theta$$

$$\sin 2\theta = 2 \sin \theta \cdot \cos \theta$$

$$\cos 2\theta = \cos^2 \theta - \sin^2 \theta$$

$$\sin^2(\theta/2) = (1 - \cos \theta) / 2$$

$$\cos(\theta/2) = (1 + \cos \theta) / 2$$

$$\sec^2 \theta = 1 + \tan^2 \theta$$

$$\csc^2 \theta = 1 + \cot^2 \theta$$

Fórmulas de Adição e Subtração

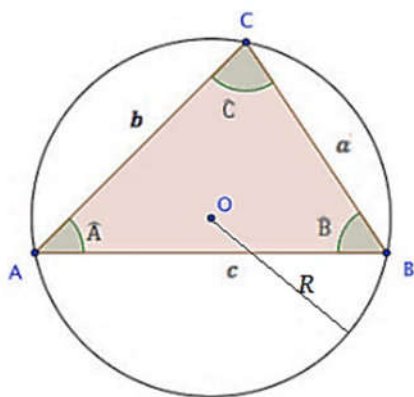
$$\sin(\theta + \beta) = \sin \theta \cdot \cos \beta + \sin \beta \cdot \cos \theta$$

$$\sin(\theta - \beta) = \sin \theta \cdot \cos \beta - \sin \beta \cdot \cos \theta$$

$$\cos(\theta + \beta) = \cos \theta \cdot \cos \beta - \sin \theta \cdot \sin \beta$$

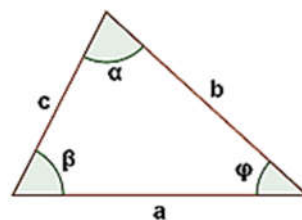
$$\cos(\theta - \beta) = \cos \theta \cdot \cos \beta + \sin \theta \cdot \sin \beta$$

Lei dos Senos



$$\frac{a}{\sin \hat{A}} = \frac{b}{\sin \hat{B}} = \frac{c}{\sin \hat{C}} = 2R$$

Lei dos cossenos



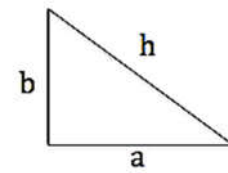
$$a^2 = b^2 + c^2 - 2 \cdot b \cdot c \cdot \cos \alpha$$

$$b^2 = a^2 + c^2 - 2 \cdot a \cdot c \cdot \cos \beta$$

$$c^2 = a^2 + b^2 - 2 \cdot a \cdot b \cdot \cos \varphi$$

Triângulo retângulo

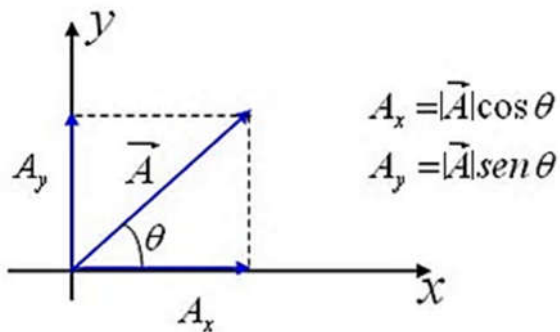
Num triângulo retângulo, o quadrado da hipotenusa é igual à soma dos quadrados dos catetos. (Teorema de Pitágoras) $h^2 = a^2 + b^2$



$$h^2 = a^2 + b^2$$

$$h = \sqrt{a^2 + b^2}$$

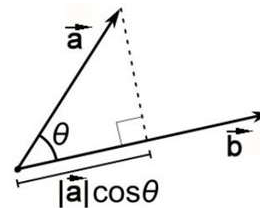
Componentes de um vetor



Produto interno ou escalar

$$\vec{a} \cdot \vec{b} = |\vec{a}| |\vec{b}| \cos \theta$$

$$\vec{a} \cdot \vec{b} = a_x b_x + a_y b_y + a_z b_z$$



Produto vetorial ou externo

$$\vec{a} \times \vec{b} = |\vec{a}| |\vec{b}| \sin \theta \vec{n}$$

Ou

$$\vec{u} \times \vec{v} = \begin{vmatrix} b_1 & c_1 \\ b_2 & c_2 \end{vmatrix} \vec{i} - \begin{vmatrix} a_1 & c_1 \\ a_2 & c_2 \end{vmatrix} \vec{j} + \begin{vmatrix} a_1 & b_1 \\ a_2 & b_2 \end{vmatrix} \vec{k}$$

