

Trigonometria

Lei dos senos: $\frac{\text{sen}(A)}{a} = \frac{\text{sen}(B)}{b} = \frac{\text{sen}(C)}{c}$

Lei dos cossenos: $a^2 = b^2 + c^2 - 2bc \cos(A)$

Setor circular: $A = \frac{\text{arco} \cdot \text{raio}}{2}$

	0	30	45	60	90	120	135	150	180
sen	0	$1/2$	$\sqrt{2}/2$	$\sqrt{3}/2$	1	$\sqrt{3}/2$	$\sqrt{2}/2$	$1/2$	0
cos	1	$\sqrt{3}/2$	$\sqrt{2}/2$	$1/2$	0	$-1/2$	$-\sqrt{2}/2$	$-\sqrt{3}/2$	-1
tg	0	$\sqrt{3}/3$	1	$\sqrt{3}$	nd	$-\sqrt{3}$	-1	$-\sqrt{3}/3$	0
rad	0	$\pi/6$	$\pi/4$	$\pi/3$	$\pi/2$	$2\pi/3$	$3\pi/4$	$5\pi/6$	π

Fórmulas trigonométricas

$$\text{sen}^2 u + \text{cos}^2 u = 1 \quad \text{tg}^2 u + 1 = \frac{1}{\text{cos}^2 u}$$

$$\cos(u \pm y) = \cos u \cos y \mp \text{sen} u \text{sen} y$$

$$\text{sen}(u \pm y) = \text{sen} u \cos y \pm \text{sen} y \cos u$$

$$\text{sen}(2u) = 2 \cos u \text{sen} u$$

$$\cos(2u) = \cos^2 u - \text{sen}^2 u$$

Relações no 1.º Quadrante

$$\operatorname{sen}\left(\frac{\pi}{2} \pm \alpha\right) = \cos \alpha \quad \operatorname{sen}\left(\frac{3\pi}{2} \pm \alpha\right) = -\cos \alpha$$

$$\cos\left(\frac{\pi}{2} - \alpha / \frac{3\pi}{2} + \alpha\right) = \operatorname{sen} \alpha$$

$$\cos\left(\frac{\pi}{2} + \alpha / \frac{3\pi}{2} - \alpha\right) = -\operatorname{sen} \alpha$$

$$\operatorname{tg}\left(\frac{\pi}{2} - \alpha / \frac{3\pi}{2} - \alpha\right) = \frac{1}{\operatorname{tg} \alpha}$$

$$\operatorname{tg}\left(\frac{\pi}{2} + \alpha / \frac{3\pi}{2} + \alpha\right) = -\frac{1}{\operatorname{tg} \alpha}$$

Função seno

$$\operatorname{sen} u = 0 \quad (-) \quad u = k\pi, \quad k \in \mathbb{Z}$$

$$\operatorname{sen} u = 1 \quad (-) \quad u = \frac{\pi}{2} + 2k\pi, \quad k \in \mathbb{Z}$$

$$\operatorname{sen} u = -1 \quad (-) \quad u = \frac{3\pi}{2} + 2k\pi, \quad k \in \mathbb{Z}$$

$$\text{Paridade: } \operatorname{sen}(-u) = -\operatorname{sen}(u)$$

Função cosseno

$$\cos u = 0 \Leftrightarrow u = \frac{\pi}{2} + k\pi, k \in \mathbb{Z}$$

$$\cos u = 1 \Leftrightarrow u = 2k\pi, k \in \mathbb{Z}$$

$$\cos u = -1 \Leftrightarrow u = \pi + 2k\pi, k \in \mathbb{Z}$$

$$\text{Paridade: } \cos(-u) = \cos u$$

Função tangente

$$\operatorname{tg} u = 0 \Leftrightarrow u = k\pi, k \in \mathbb{Z}$$

$$\operatorname{tg} u = 1 \Leftrightarrow u = \frac{\pi}{4} + k\pi, k \in \mathbb{Z}$$

$$\operatorname{tg} u = -1 \Leftrightarrow u = \frac{3\pi}{4} + k\pi, k \in \mathbb{Z}$$

$$\text{Paridade: } \operatorname{tg}(-u) = -\operatorname{tg} u$$

Derivadas

$$(\operatorname{sen} u)' = u' \cos u \quad (\cos u)' = -u' \operatorname{sen} u$$

$$(\operatorname{tg} u)' = \frac{u'}{\cos^2 u}$$