Formulário Trigonometria 11º ano

Razões trigonométricas de um ângulo agudo *SOHCAHTOA*

$\sin\alpha = \dfrac{cat\ oposto}{hipotenusa}$; $\cos\alpha = \dfrac{cat\ adjacente}{hipotenusa}$; $\tan\alpha = \dfrac{cat\ oposto}{cat\ adjacente}$

Relações entre as razões trigonométricas

$\sin^2\alpha + \cos^2\alpha = 1$; $\tan^2\alpha + 1 = \dfrac{1}{\cos^2\alpha}$; $\dfrac{1}{\tan^2\alpha} + 1 = \dfrac{1}{\sin^2\alpha}$; $\tan\alpha = \dfrac{\sin\alpha}{\cos\alpha}$

$\sin^2\alpha = 1 - \cos^2\alpha$; $\cos^2\alpha = 1 - \sin^2\alpha$; $\sin(2\alpha) = 2\sin\alpha\cos\alpha$; $\cos(2\alpha) = \cos^2\alpha - \sin^2\alpha$

Equações trigonométricas

$\sin x = \sin\alpha \Leftrightarrow x = \alpha + 2k\pi \vee x = \pi - \alpha + 2k\pi; k \in Z$

$\cos x = \cos\alpha \Leftrightarrow x = \alpha + 2k\pi \vee x = -\alpha + 2k\pi; k \in Z$

$\tan x = \tan\alpha \Leftrightarrow x = \alpha + k\pi; k \in Z$

Casos particulares de equações trigonométricas

$\sin a = 0 \Leftrightarrow a = k\pi, k \in Z$ $\quad\quad$ $\cos a = 0 \Leftrightarrow a = \dfrac{\pi}{2} + k\pi, k \in Z$

$\sin a = 1 \Leftrightarrow a = \dfrac{\pi}{2} + 2k\pi, k \in Z$ $\quad\quad$ $\cos a = 1 \Leftrightarrow a = 2k\pi, k \in Z$

$\sin a = -1 \Leftrightarrow a = -\dfrac{\pi}{2} + 2k\pi, k \in Z$ $\quad\quad$ $\cos a = -1 \Leftrightarrow a = \pi + 2k\pi, k \in Z$

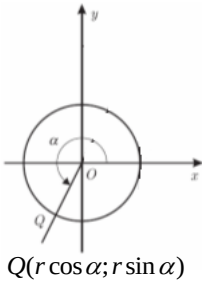
A ter em conta nas equações trigonométricas

$-\tan\alpha = \tan(-\alpha)$; $-\sin\alpha = \sin(-\alpha)$; $-\cos\alpha = \cos(\pi + \alpha)$

$-\sin\alpha = \cos\left(\dfrac{\pi}{2} + \alpha\right)$; $\sin\alpha = \cos\left(\dfrac{\pi}{2} - \alpha\right)$; $-\cos\alpha = \sin\left(\dfrac{3\pi}{2} + \alpha\right)$; $\cos\alpha = \sin\left(\dfrac{\pi}{2} - \alpha\right)$

Razões trigonométricas muito utilizadas

	0	$\frac{\pi}{2}$	π	$\frac{3\pi}{2}$	2π	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$-\frac{\pi}{6}$	$-\frac{\pi}{4}$	$-\frac{\pi}{3}$	$\frac{7\pi}{6}$	$\frac{5\pi}{4}$	$\frac{4\pi}{3}$
Sin	0	1	0	-1	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	$-\frac{1}{2}$	$-\frac{\sqrt{2}}{2}$	$-\frac{\sqrt{3}}{2}$			
Cos	1	0	-1	0	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$				$-\frac{\sqrt{3}}{2}$	$-\frac{\sqrt{2}}{2}$	$-\frac{1}{2}$
Tan	0	ND	0	ND	0	$\frac{\sqrt{3}}{3}$	1	$\sqrt{3}$	$-\frac{\sqrt{3}}{3}$	-1	$-\sqrt{3}$			



$Q(r\cos\alpha; r\sin\alpha)$

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