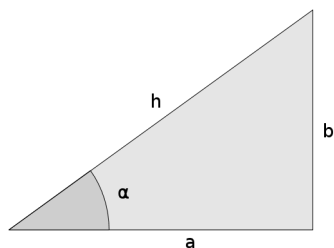


Tabla de Fórmulas Trigonómicas



$$\operatorname{sen} \alpha = \frac{b}{h} = \frac{\text{Cateto Opuesto}}{\text{Hipotenusa}}$$

$$\operatorname{cos} \alpha = \frac{a}{h} = \frac{\text{Cateto Contiguo}}{\text{Hipotenusa}}$$

$$\operatorname{tg} \alpha = \frac{b}{a} = \frac{\text{Cateto Opuesto}}{\text{Cateto Contiguo}}$$

$$\operatorname{sen}^2(x) + \operatorname{cos}^2(x) = 1 \Rightarrow \begin{cases} \operatorname{sen}^2(x) = 1 - \operatorname{cos}^2(x) \Rightarrow \operatorname{sen}(x) = \sqrt{1 - \operatorname{cos}^2(x)} \\ \operatorname{cos}^2(x) = 1 - \operatorname{sen}^2(x) \Rightarrow \operatorname{cos}(x) = \sqrt{1 - \operatorname{sen}^2(x)} \end{cases}$$

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

$$\operatorname{tg}(x) = \frac{\operatorname{sen}(x)}{\operatorname{cos}(x)} \quad \operatorname{cotg}(x) = \frac{\operatorname{cos}(x)}{\operatorname{sen}(x)} = \frac{1}{\operatorname{tg}(x)}$$

$$\operatorname{sec}(x) = \frac{1}{\operatorname{cos}(x)} \quad \operatorname{cosec}(x) = \frac{1}{\operatorname{sen}(x)}$$

$$1 + \operatorname{tg}^2(x) = \operatorname{sec}^2(x) \quad 1 + \operatorname{cotg}^2(x) = \operatorname{cosec}^2(x)$$

Fórmulas del ángulo suma

$$\operatorname{cos}(A + B) = \operatorname{cos}(A)\operatorname{cos}(B) - \operatorname{sen}(A)\operatorname{sen}(B)$$

$$\operatorname{sen}(A + B) = \operatorname{sen}(A)\operatorname{cos}(B) + \operatorname{cos}(A)\operatorname{sen}(B)$$

$$\operatorname{cos}(A - B) = \operatorname{cos}(A)\operatorname{cos}(B) + \operatorname{sen}(A)\operatorname{sen}(B)$$

$$\operatorname{sen}(A - B) = \operatorname{sen}(A)\operatorname{cos}(B) - \operatorname{cos}(A)\operatorname{sen}(B)$$

$$\operatorname{tg}(A + B) = \frac{\operatorname{tg}(A) + \operatorname{tg}(B)}{1 - \operatorname{tg}(A)\operatorname{tg}(B)}$$

$$\operatorname{tg}(A - B) = \frac{\operatorname{tg}(A) - \operatorname{tg}(B)}{1 + \operatorname{tg}(A)\operatorname{tg}(B)}$$

Fórmulas del ángulo doble

$$\operatorname{cos}(2A) = \operatorname{cos}^2(A) - \operatorname{sen}^2(A)$$

$$\operatorname{sen}(2A) = 2\operatorname{sen}(A)\operatorname{cos}(A)$$

$$\operatorname{tg}(2A) = \frac{2\operatorname{tg}(A)}{1 - \operatorname{tg}^2(A)}$$

$$\operatorname{cos}^2(A) = \frac{1 + \operatorname{cos}(2A)}{2} \quad \operatorname{sen}^2(A) = \frac{1 - \operatorname{cos}(2A)}{2} \quad \operatorname{tg}^2(A) = \frac{1 - \operatorname{cos}(2A)}{1 + \operatorname{cos}(2A)}$$

Fórmulas en función de la tangente

Si $t = \operatorname{tg}\left(\frac{A}{2}\right)$, entonces:

$$\operatorname{sen}(A) = \frac{2t}{1 + t^2} \quad \operatorname{cos}(A) = \frac{1 - t^2}{1 + t^2} \quad \operatorname{tg}(A) = \frac{2t}{1 - t^2}$$

Si $t = \operatorname{tg}(A)$, entonces:

$$\operatorname{sen}^2(A) = \frac{t^2}{1 + t^2} \quad \operatorname{cos}^2(A) = \frac{1}{1 + t^2}$$



Sumas, diferencias y productos

$$\operatorname{sen}(A) + \operatorname{sen}(B) = 2 \operatorname{sen}\left(\frac{A+B}{2}\right) \cos\left(\frac{A-B}{2}\right)$$

$$\operatorname{sen}(A) - \operatorname{sen}(B) = 2 \operatorname{sen}\left(\frac{A-B}{2}\right) \cos\left(\frac{A+B}{2}\right)$$

$$\cos(A) + \cos(B) = 2 \cos\left(\frac{A+B}{2}\right) \cos\left(\frac{A-B}{2}\right)$$

$$\cos(A) - \cos(B) = -2 \operatorname{sen}\left(\frac{A+B}{2}\right) \operatorname{sen}\left(\frac{A-B}{2}\right)$$

$$\operatorname{sen}(mA) \operatorname{sen}(nA) = \frac{\cos(mA - nA) - \cos(mA + nA)}{2}$$

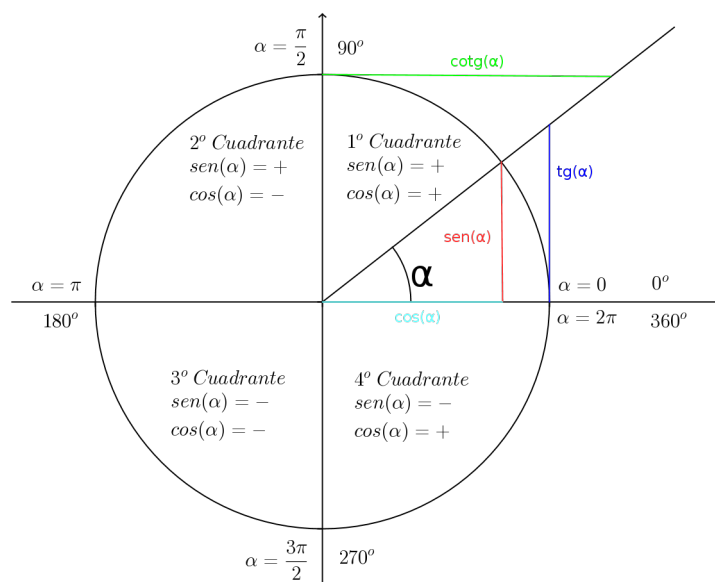
$$\operatorname{sen}(mA) \cos(nA) = \frac{\operatorname{sen}(mA - nA) + \operatorname{sen}(mA + nA)}{2}$$

$$\cos(mA) \cos(nA) = \frac{\cos(mA - nA) + \cos(mA + nA)}{2}$$

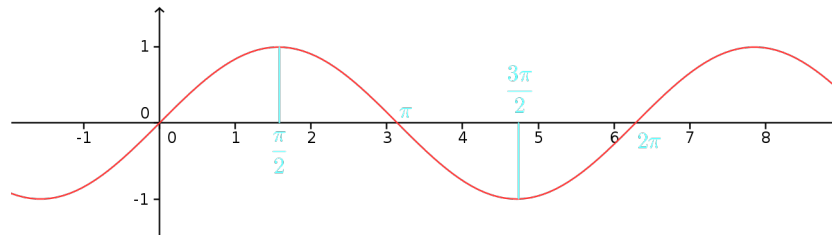
Medidas de los principales ángulos

Grados	Radianes	Seno	Coseno	Tangente
0	0	0	1	0
30	$\frac{\pi}{6}$	$\frac{1}{2}$	$\frac{\sqrt{3}}{2}$	$\frac{1}{\sqrt{3}}$
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	∞

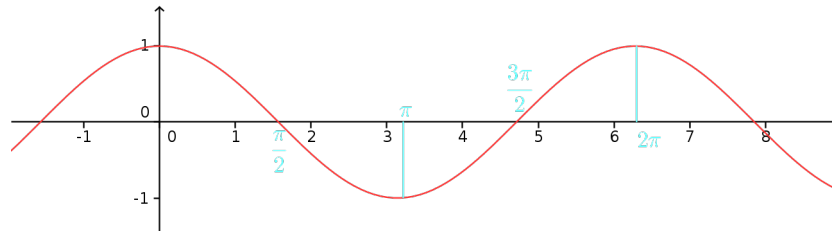
Circunferencia de radio 1



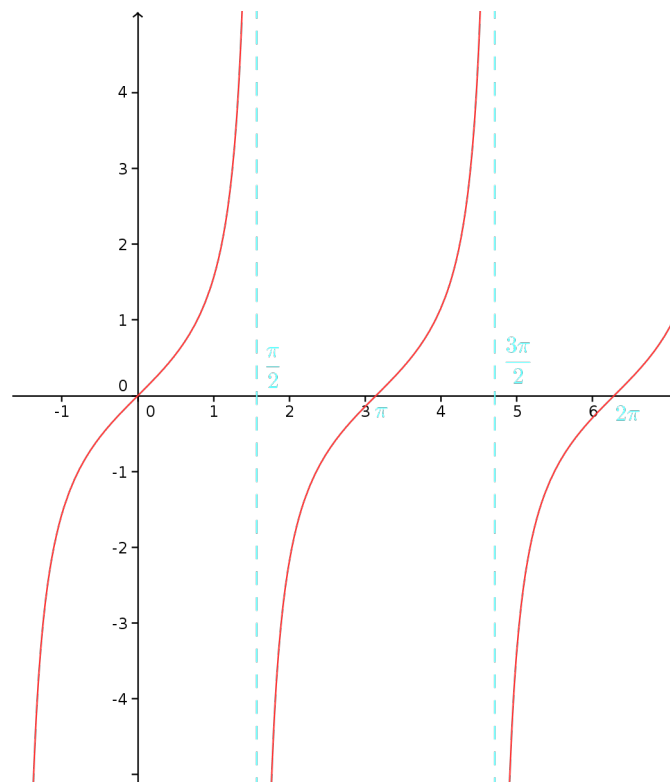
Gráficas de las principales funciones



Función Seno



Función Coseno



Función Tangente

