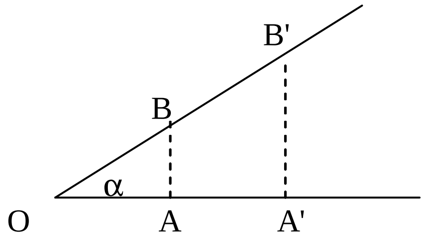
TRIGONOMETRÍA

Razones trigonométricas :



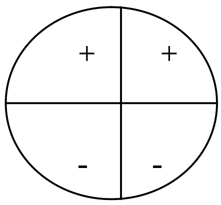
$\operatorname{sen}\alpha = AB/OB = A'B'/OB'$
$\cos\alpha = OA/OB = OA'/OB'$
$\operatorname{tg}\alpha = AB/OA = A'B'/OA'$
$\operatorname{cotg}\alpha = OA/AB = OA'/A'B'$
$\sec\alpha = OB/OA = OB'/OA'$
$\operatorname{cosec}\alpha = OB/AB = OB'/A'B'$

Relación entre las razones trigonométricas :

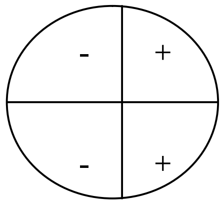
$\operatorname{tg}\alpha = \operatorname{sen}\alpha/\cos\alpha$ $\quad$ $\operatorname{cotg}\alpha = \cos\alpha/\operatorname{sen}\alpha = 1/\operatorname{tg}\alpha$
$\sec\alpha = 1/\cos\alpha$ $\quad$ $\operatorname{cosec}\alpha = 1/\operatorname{sen}\alpha$
$\operatorname{sen}^2\alpha + \cos^2\alpha = 1$ $\quad$ $\operatorname{tg}^2 \alpha + 1 = \sec^2\alpha$ $\quad$ $\operatorname{cotg}^2\alpha + 1 = \operatorname{cosec}^2\alpha$

Signo de las razones trigonométricas :

$\operatorname{sen}\alpha$



$\cos\alpha$



Reducción al primer cuadrante :

sen(180-x)=senx
cos(180-x)=-cosx

sen(180+x)=-senx
cos(180+x)=-cosx

sen(360-x)=-senx
cos(360-x)=cosx

sen(90-x)=cosx
cos(90-x)=senx

sen(90+x)=cosx
cos(90+x)=-senx

sen(270-x)=-cosx
cos(270-x)=-senx

sen(270+x)=-cosx
cos(270+x)=senx

sen(-x)=-senx
cos(-x)=cosx

Razones trigonométricas de adición :

sen(x+y) = senxcosy + senycosx
sen(x-y) = senxcosy - senycosx

cos(x+y) = cosxcosy - senxseny
cos(x-y) = cosxcosy + senxseny

Fórmulas del ángulo doble :

sen2x = 2senxcosx
$\cos 2x = \cos^2 x - \operatorname{sen}^2 x$

Fórmulas del ángulo mitad :

$$\cos\frac{x}{2} = \sqrt{\frac{1+\cos x}{2}}$$

$$\operatorname{sen}\frac{x}{2} = \sqrt{\frac{1-\cos x}{2}}$$

Transformación de sumas en productos :

$$\operatorname{sen} x + \operatorname{sen} y = 2\operatorname{sen}\frac{x+y}{2}\cos\frac{x-y}{2}$$

$$\operatorname{sen} x - \operatorname{sen} y = 2\operatorname{sen}\frac{x-y}{2}\cos\frac{x+y}{2}$$

$$\cos x + \cos y = 2\cos\frac{x+y}{2}\cos\frac{x-y}{2}$$

$$\cos x - \cos y = -2\operatorname{sen}\frac{x+y}{2}\operatorname{sen}\frac{x-y}{2}$$

Tª del seno : $\frac{a}{\operatorname{sen} A} = \frac{b}{\operatorname{sen} B} = \frac{c}{\operatorname{sen} C}$ =2r

Tª del coseno : $a^2 = b^2 + c^2 - 2 \cdot b \cdot c \cdot \cos A$

Fórmulas de Briggs y Herón : (siendo a+b+c=2p)

$$\operatorname{sen}\frac{A}{2} = \sqrt{\frac{(p-c)(p-b)}{b \cdot c}}$$

$$\cos\frac{A}{2} = \sqrt{\frac{p(p-a)}{b \cdot c}}$$

$$S = \sqrt{p(p-a)(p-b)(p-c)}$$