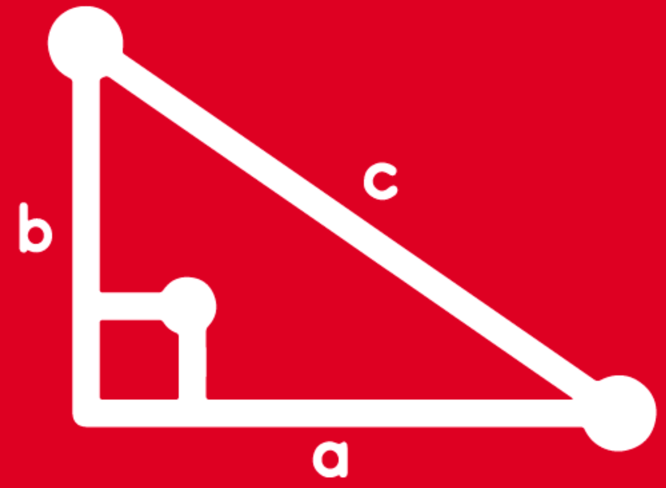
TRIGONOMETRY

TOMO VIII



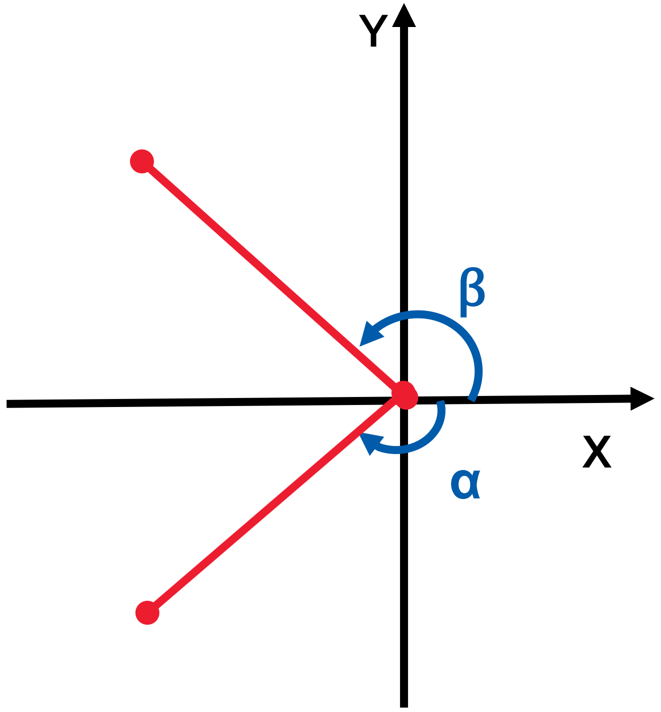
1st
SECONDARY

ADVISORY

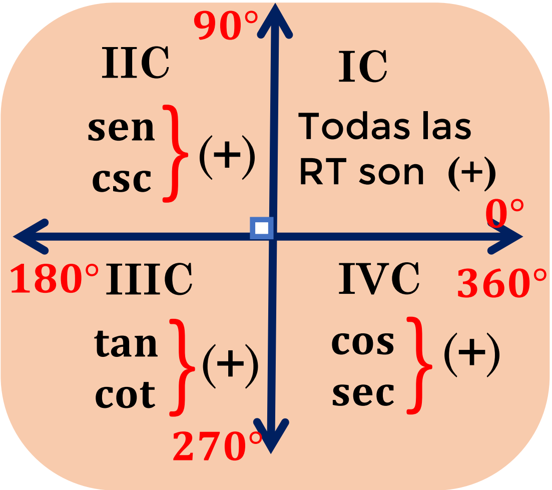
SACO OLIVEROS

HELICO-PRACTICE 1

Del gráfico, determine el signo de cotα y secβ



Recuerda:



Resolución:

Como $\alpha \in$ IIIC

$$\cot\alpha = (+)$$

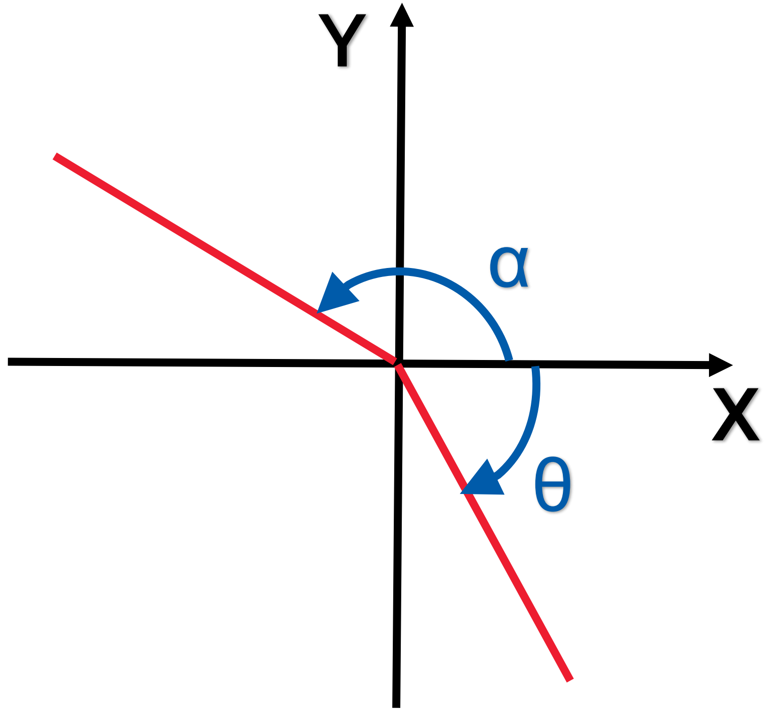
Como $\beta \in$ IIC

$$\sec\beta = (-)$$

HELICO-PRACTICE 2

Del gráfico, determine el signo de:

$$M = \frac{\cos\theta}{\tan\alpha} \text{ y } N = \frac{\csc\alpha}{\sec\theta}$$

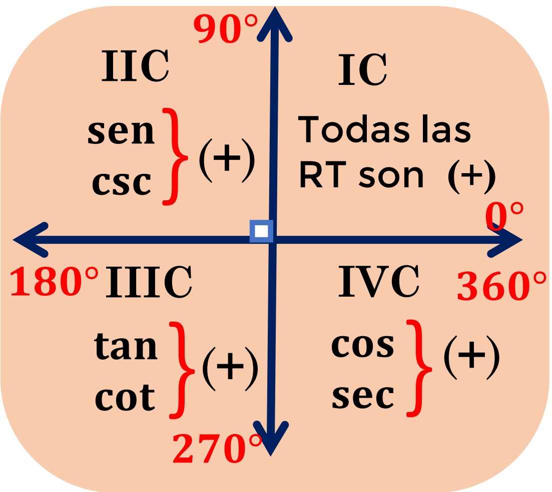


Resolución:

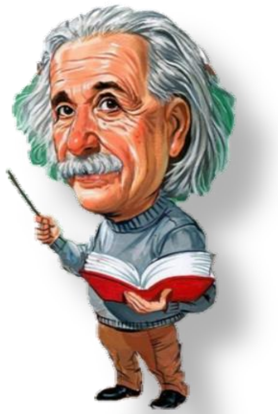
$$M = \frac{\overbrace{\cos\theta}^{\in \text{IVC}}}{\underbrace{\tan\alpha}_{\in \text{IIC}}} = \frac{(+)}{(-)} = \boxed{(-)}$$

$$N = \frac{\overbrace{\csc\alpha}^{\in \text{IIC}}}{\underbrace{\sec\theta}_{\in \text{IVC}}} = \frac{(+)}{(+)} = \boxed{(+)}$$

Recuerda:



¡Muy bien!



HELICO-PRACTICE 3

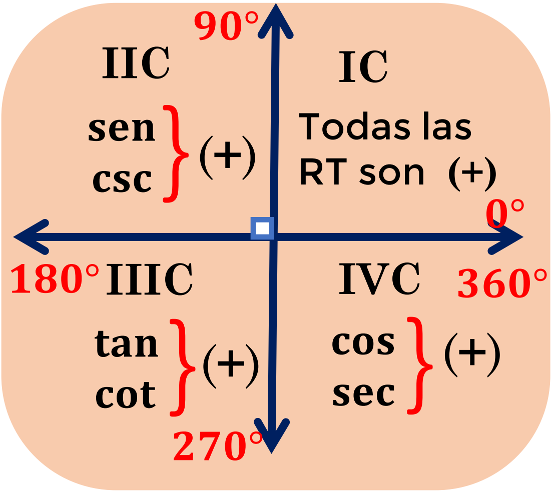
Determine el signo de P, Q y R.

$P = \csc 83°.\sec 265°$

$$Q = \frac{\text{sen}140°.\tan 100°}{\cos 305°}$$

$R = \text{sen}290°.\cot 108°.\cos 316°$

Recuerda:



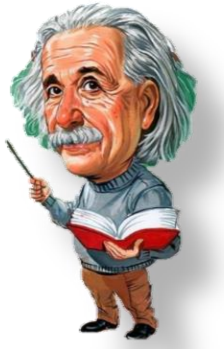
Resolución:

$P = \underbrace{\csc 83°}_{(IC)}.\underbrace{\sec 265°}_{(IIIC)} = (+)(-) = \boxed{(-)}$

$$Q = \frac{\overbrace{\text{sen}140°}^{IIC}.\overbrace{\tan 100°}^{IIC}}{\underbrace{\cos 305°}_{IVC}} = \frac{(+)(-)}{(+)} = \boxed{(-)}$$

$R = \underbrace{\text{sen}290°}_{(IVC)}.\underbrace{\cot 108°}_{(IIC)}.\underbrace{\cos 316°}_{(IVC)} = (-)(-)(+) = \boxed{(+)}$

¡Muy bien!



HELICO-PRACTICE 4

Determine el valor numérico de:

$$E = (37sec360° + 28csc270°)^2$$

Recuerda:

R.T	0° ; 360°	90°	180°	270°
SEN	O	1	0	-1
COS	1	O	-1	0
TAN	0	N.D	0	N.D
COT	N.D	0	N.D	0
SEC	1	N.D	-1	N.D
CSC	N	1	N.D	-1

Resolución:

$$E = (37\sec 360° + 28\csc 270°)^2$$

$$E = (37(1) + 28(-1))^2$$

$$E = (37 - 28)^2$$

$$E = (9)^2$$

$$\therefore \boxed{E = 81}$$

HELICO-PRACTICE 5

Natalia ha heredado un terreno de forma rectangular, tal como muestra la figura. Calcule el área de dicho terreno

Resolución:

(4cos0° - 6sen270°)m

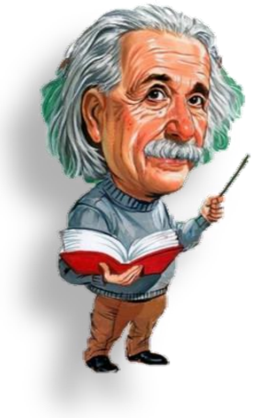
$$(4(1) - 6(-1))m$$

$$10m$$

(12csc90°.sec360°)

$$(12(1).(1))m$$

$$12m$$



Recuerda:

R.T	0° ; 360°	90°	180°	270°
SEN	0	1	0	-1
COS	1	0	-1	0
TAN	0	N.D	0	N.D
COT	N.D	0	N.D	0
SEC	1	N.D	-1	N.D
CSC	N	1	N.D	-1

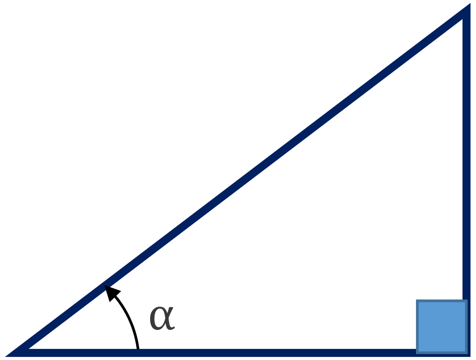
Piden:

$A_{\square}$ = BxH = (12m)x(10m)

$A_{\square} = 120m^2$

HELICO-PRACTICE 6

Del gráfico, calcule cotα



$$2\cos 360° - 2\sec 180°$$

$$\mathrm{C.O} = 4$$

$$3\mathrm{sen}90° + \cos 270°$$

$$\mathrm{C.A} = 3$$

Recuerda:

R.T	0° ; 360°	90°	180°	270°
SEN	0	1	0	-1
COS	1	0	-1	0
TAN	0	N.D	0	N.D
COT	N.D	0	N.D	0
SEC	1	N.D	-1	N.D
CSC	N	1	N.D	-1

Resolución:

$$\cot\alpha = \frac{\mathrm{C.}A}{\mathrm{C.}O}$$

$$* \; 3\mathrm{sen}90° + \cos 270° = 3(1) + 0 = 3$$

$$* \; 2\cos 360° - 2\sec 180° = 2(1) - 2(-1) = 4$$

$$\cot\alpha = \frac{3}{4}$$

$$\therefore \quad \boxed{\cot\alpha = \frac{3}{4}}$$

HELICO-PRACTICE 7

Indique cuáles de los siguientes ángulos son coterminales.

I. 650° y -430°
II. 480° y –250°
III. 350° y 10°

Recuerda:

α y β son ángulos coterminales, entonces: $\alpha - \beta = 360^\circ n; \ n \in \mathbb{Z}$

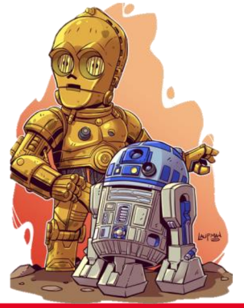
Resolución:

I 650° - (-430°) = 1080°(si es múltiplo de 360°)

II 480° - (-250°)=730° (no es múltiplo de 360°)

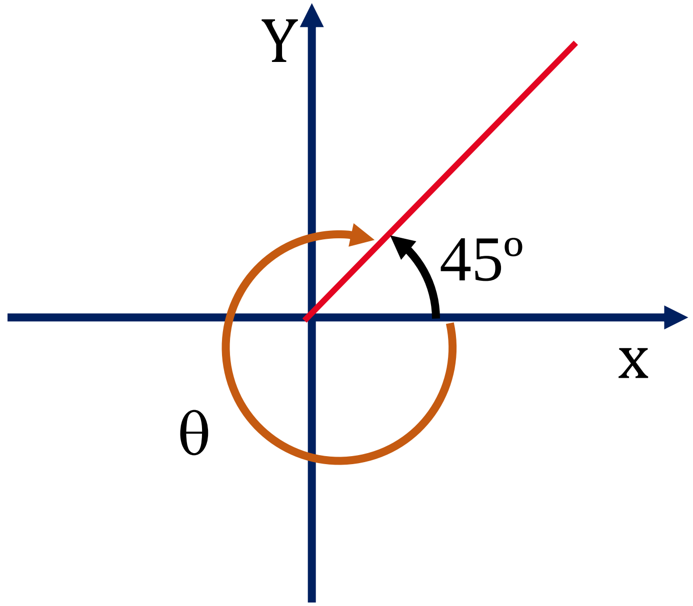
III 350° - 10° = 340°(no es múltiplo de 360°)

$\therefore$ 650° y -430° son ángulos coterminales



HELICO-PRACTICE 8

Del gráfico



Efectúe

$$E = 4\sqrt{2}\,\text{sen}\theta + 11\cot\theta$$

Resolución:

$$E = 4\sqrt{2}\,\text{sen}\theta + 11\cot\theta$$

Recuerda:

$$\text{sen}\theta = \text{sen}45^\circ$$

$$\cot\theta = \cot 45^\circ$$

Reemplazamos:

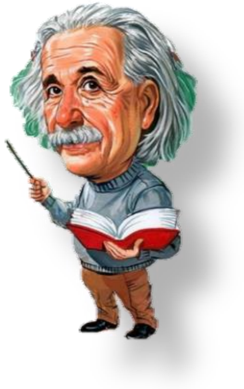
$$E = 4\sqrt{2}\,\text{sen}45^\circ + 11\cot 45^\circ$$

$$E = 4\cancel{\sqrt{2}} \cdot \frac{1}{\cancel{\sqrt{2}}} + 11(1)$$

$$E = 4 + 11$$

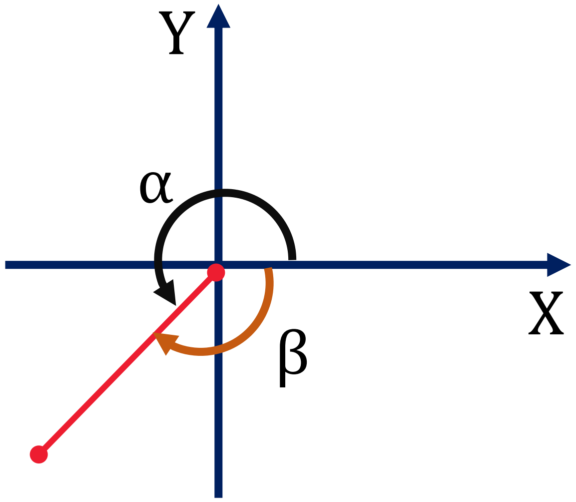
$$\therefore \boxed{E = 15}$$

¡Muy bien!



HELICO-PRACTICE 9

Del gráfico



Reduzca

$$M = \frac{23\csc\beta}{\csc\alpha} + \frac{7\sec\alpha}{\sec\beta}$$

Resolución:

$$M = \frac{23\csc\beta}{\csc\alpha} + \frac{7\sec\alpha}{\sec\beta}$$

Recuerda:

$$\csc\alpha = \csc\beta$$

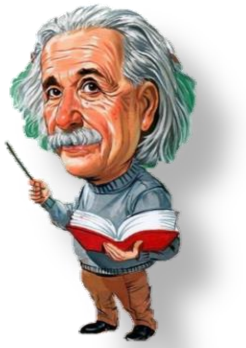
$$\sec\alpha = \sec\beta$$

Reemplazamos

$$M = \frac{23\cancel{\csc\beta}}{\cancel{\csc\beta}} + \frac{7\cancel{\sec\alpha}}{\cancel{\sec\alpha}}$$

$$M = 23\,(1) + 7(1)$$

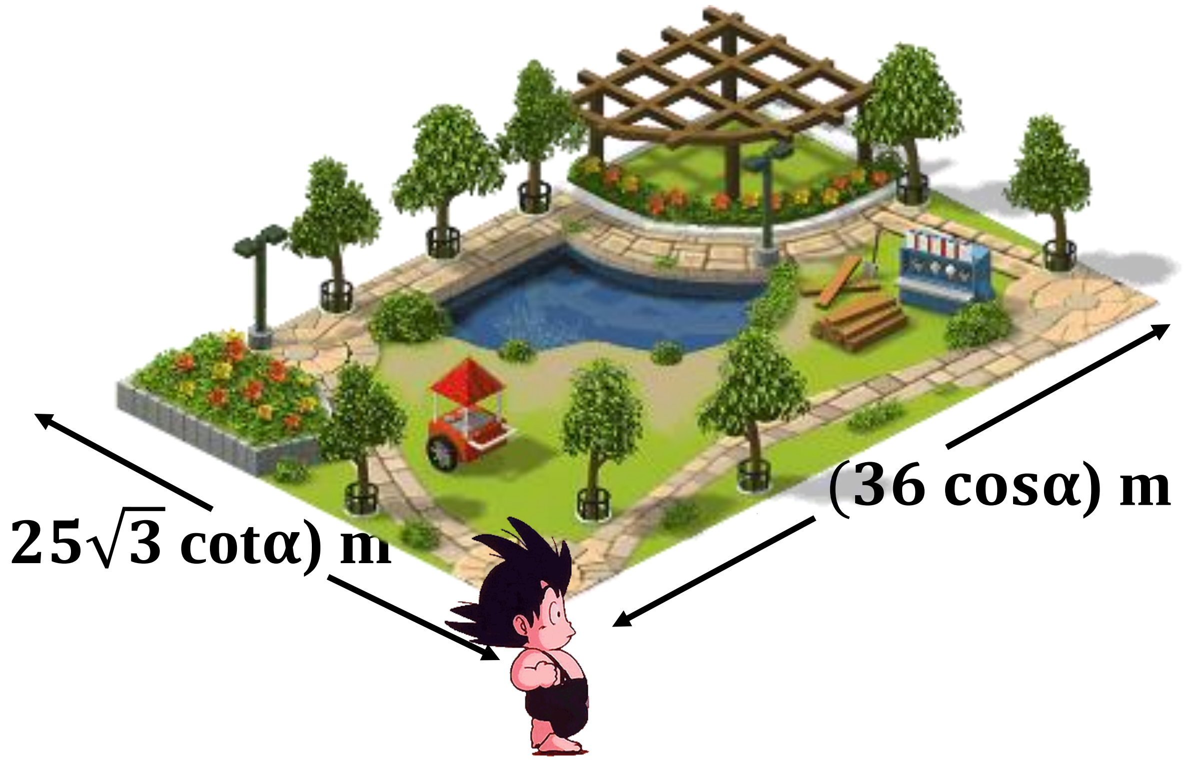
¡Muy bien!



$$\therefore\ \boxed{M = 30}$$

HELICO-PRACTICE 10

Rodrigo es un niño al que le gusta cuidar su salud, diariamente sale a correr 30 min alrededor del parque que esta cerca a su casa (el parque tiene forma rectangular, ver figura).



Si α y 60° son ángulos coterminales, ¿cuál es el área de dicho parque?

Resolución

Por propiedad de ángulos coterminales
$RT(\alpha) = RT(60°)$

Entonces:

$36\cos\alpha$

$36\cos 60°$

$36(1/2)$

18m

$25\sqrt{3}\cot\alpha$

$25\sqrt{3}\cot 60°$

$25\cancel{\sqrt{3}}.\ \dfrac{1}{\cancel{\sqrt{3}}}$

25 m

Reemplazar:

S = (18 m)(25 m)

$\therefore$ El área del parque es 450 m^2