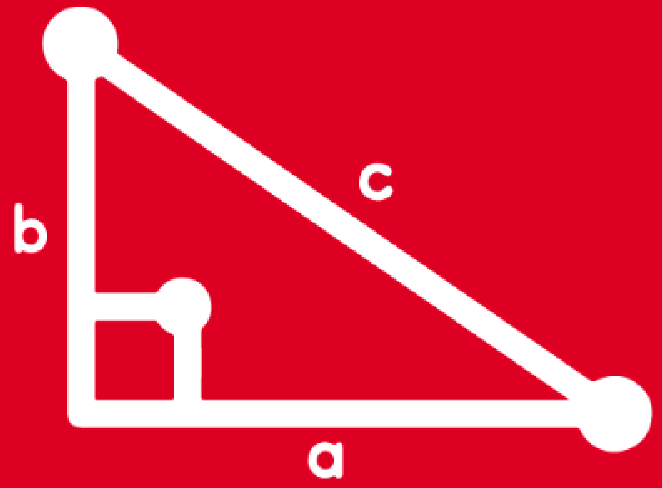
TRIGONOMETRY

VOLUME VIII

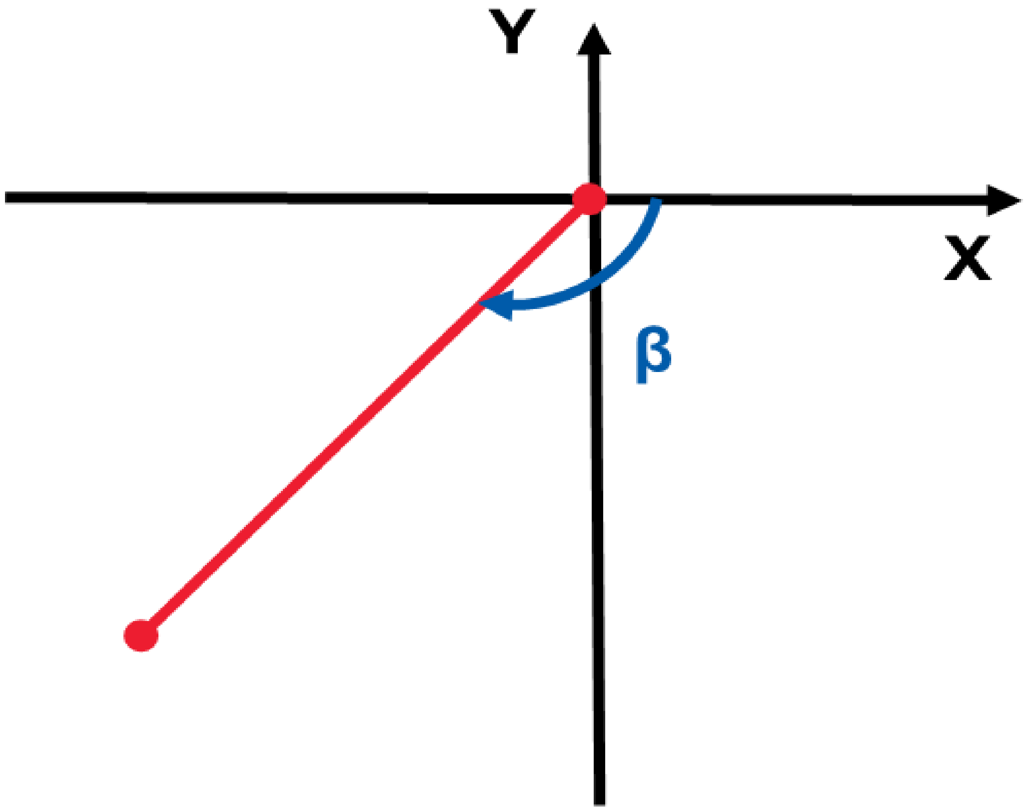
1st
SECONDARY



FEEDBACK

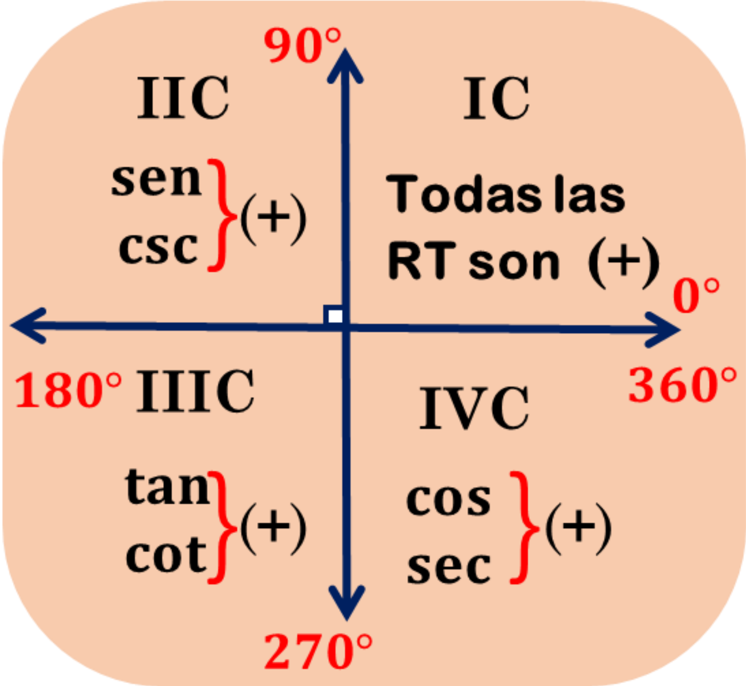
SACO OLIVEROS

1 Del gráfico, determine el signo de cosβ.



Resolución

Recuerda:

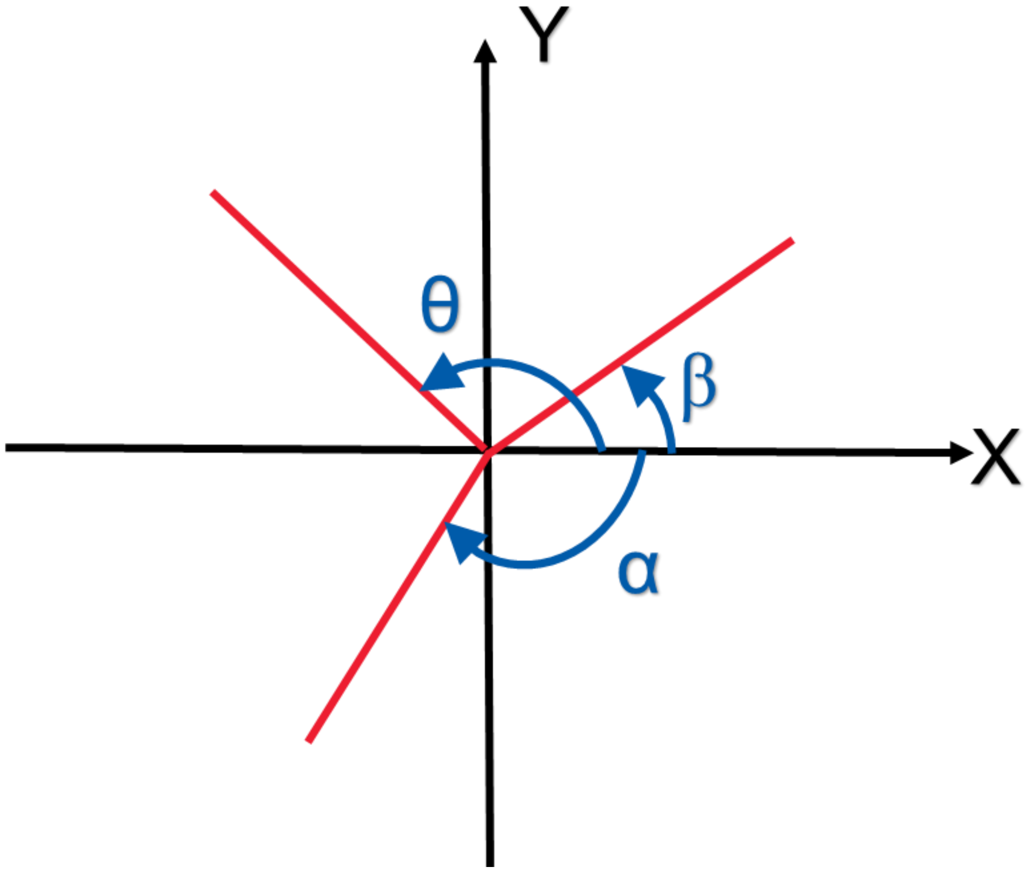


Del gráfico, β ∈ IIIC:

$$\therefore \ \boxed{\cos\beta = (-)}$$

2 Del gráfico, determine el signo de

$$F = \sec\theta . \operatorname{sen}\beta . \cot\alpha$$



Resolución

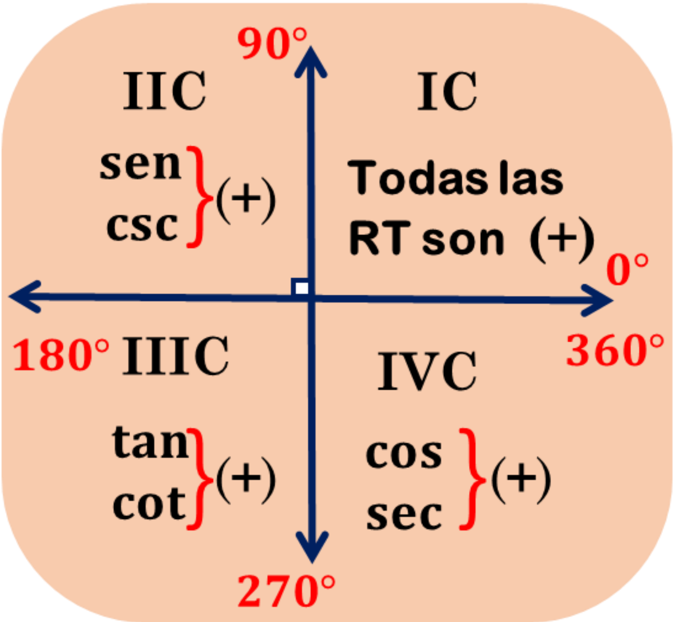
$$F = \underbrace{\sec\theta}_{\in \text{ IIC}} \cdot \underbrace{\operatorname{sen}\beta}_{\in \text{ IC}} \cdot \underbrace{\cot\alpha}_{\in \text{ IIIC}}$$

$$F = \underbrace{(-)\ (+)}\ (+)$$

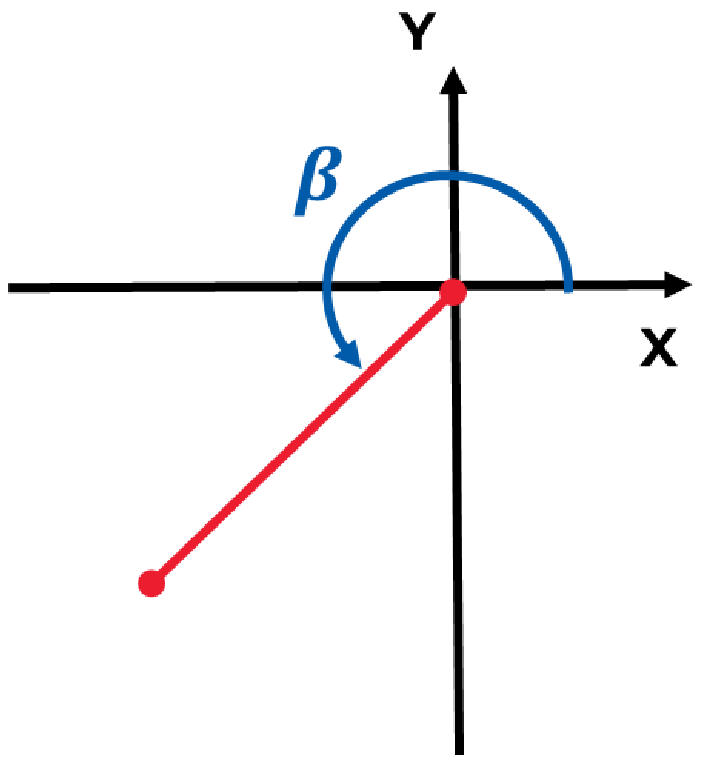
$$F = (-)\ (+)$$

$$\therefore \boxed{F = (-)}$$

Recuerda:



3 Del gráfico, determine el signo de $\csc\left(\frac{\beta}{2}\right)$.



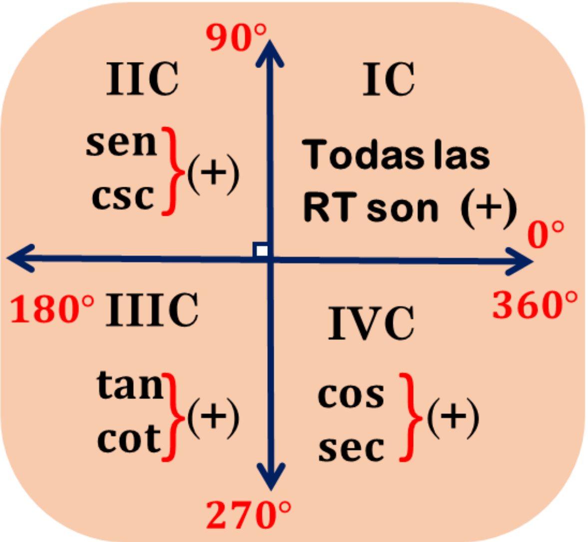
Resolución

$\beta \in \text{IIIC}: 180° < \beta < 270°$ ...÷ 2

$$90° < \frac{\beta}{2} < 135°$$

$$\rightarrow \frac{\beta}{2} \in \text{IIC}$$

Recuerda:



$$\therefore \boxed{\csc\left(\frac{\beta}{2}\right) = (+)}$$

4 **Determine el valor numérico de**

$$\mathbf{E = (20cos180° + 8csc90°)^2}$$

Recuerda

RT	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

Reemplazamos en:

$$E = (20(\mathbf{-1}) + 8(\mathbf{1}))^2$$

$$E = (-20 + 8)^2$$

$$E = (-12)^2$$

$$\therefore \boxed{\mathbf{E = 144}}$$

5 Si $\alpha = 10°$, calcule el valor numérico de

$$A = 10\csc 9\alpha - 3\cos 36\alpha - 8\tan 18\alpha$$

Resolución

Reemplazamos $\alpha = 10°$, en:

$$A = 10\csc 90° - 3\cos 360° - 8\tan 180°$$

$$A = 10(1) - 3(1) - 8(0)$$

$$A = 10 - 3$$

$$\therefore \boxed{A = 7}$$

6 Determine el valor numérico de x si:

$$\mathbf{sen270° = \frac{7x + 13}{5 - x}}$$

Recuerda

RT	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

$$-1 = \frac{7x + 13}{5 - x}$$

$$-5 + x = 7x + 13$$

$$-5 - 13 = 6x$$

$$-18 = 6x$$

$$\therefore \boxed{x = 3}$$

7 Indique cuáles de los siguientes ángulos son coterminales.

I. 340° y -200°
II. 490° y –230°
III. 710° y 10°

Recuerda:

α y β son ángulos coterminales, entonces:

$$\alpha - \beta = 360^\circ n; \ n \in \mathbb{Z}$$

Resolución

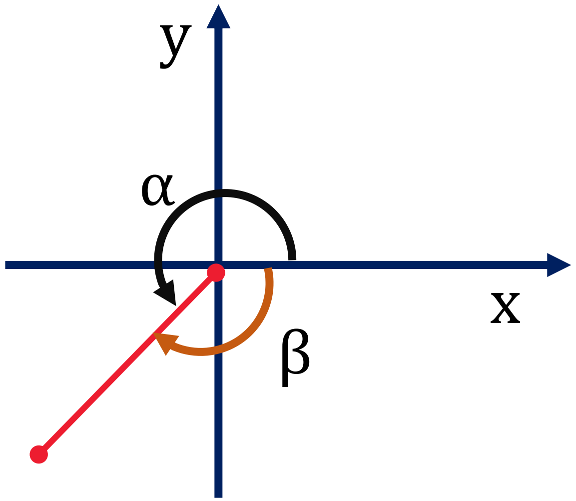
I. 340° - (-200°) = 540° (no es múltiplo)

II. 490° - (-230°) = 720° (sí es múltiplo)

III. 710° - 10° = 700° (no es múltiplo)

$\therefore$ 490° y -230° son ángulos coterminales

8 Del gráfico



Reduzca

$$M = \frac{18\cos\beta}{\cos\alpha} - \frac{5\cot\alpha}{\cot\beta}$$

Resolución

α y β son COTERMINALES

Recuerda:

$$\cos\alpha = \cos\beta$$
$$\cot\alpha = \cot\beta$$

$$M = \frac{18\cos\beta}{\cos\alpha} - \frac{5\cot\alpha}{\cot\beta}$$

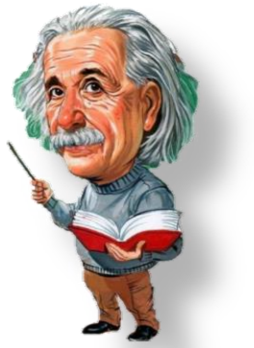
Reemplazamos

$$M = \frac{18\cancel{\cos\beta}}{\cancel{\cos\beta}} - \frac{5\cancel{\cot\alpha}}{\cancel{\cot\alpha}}$$

$$M = 18(1) - 5(1)$$

$$\therefore \boxed{M = 13}$$

¡Muy bien!



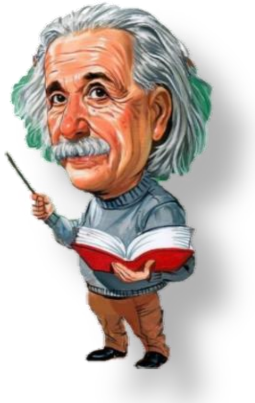
9 Si α y θ son ángulos coterminales, tal que $\cot\alpha = 1$; efectúe

$$N = 5\cot\alpha - \frac{\cot\theta}{5}$$

Recuerda:

$$\cot\alpha = \cot\theta = 1$$

¡Muy bien!



Resolución

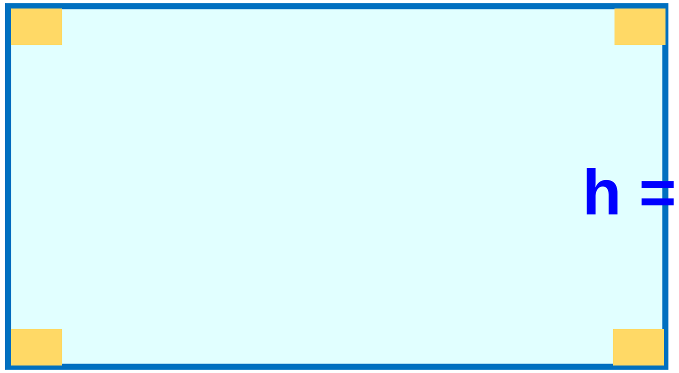
$$N = 5\cot\alpha - \frac{\cot\theta}{5}$$

$$N = 5\cot\alpha - \frac{\cot\alpha}{5}$$

$$N = 5(1) - \frac{(1)}{5}$$

$$\therefore \boxed{M = \frac{24}{5}}$$

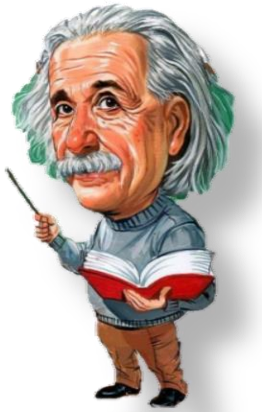
10 **Lucía compró un terreno en forma de rectángulo, tal como se muestra en la figura.**



$\mathbf{h} = (12\sqrt{3}\tan\alpha)\ \mathrm{m}$

$\mathbf{b} = (30\ \mathrm{sen}\alpha)\ \mathrm{m}$

Si α y 30º son ángulos coterminales, ¿cuál es el área de dicho terreno?



Resolución

Por propiedad de ángulos coterminales:

RT(α)= RT (30°)

Entonces:

$b = 30\mathrm{sen}\alpha$

$b = 30\mathrm{sen}30°$

$b = 30(1/2)$

$b = 15\mathrm{m}$

$h = 12\sqrt{3}\tan\alpha$

$h = 12\sqrt{3}\tan 30°$

$h = 12\cancel{\sqrt{3}}.\dfrac{1}{\cancel{\sqrt{3}}}$

$h = 12\ \mathrm{m}$

Reemplazamos:

S = (15 m)(12 m)

∴ **El área del terreno es $180\ \mathrm{m}^2$.**

SACO OLIVEROS