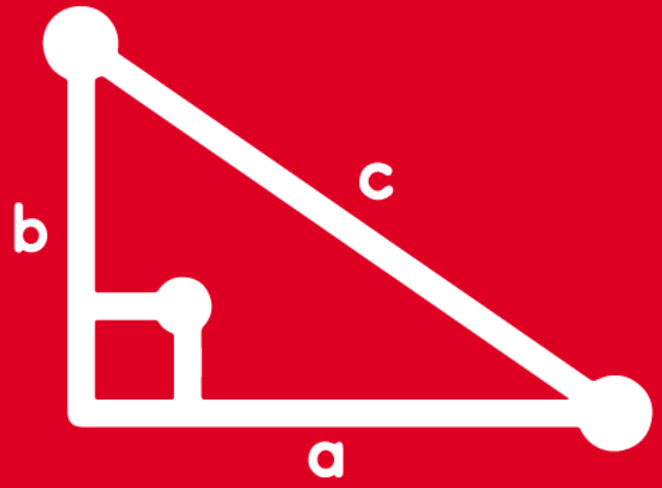
TRIGONOMETRY

Chapter 21



2nd
SECONDARY

REDUCCIÓN AL PRIMER CUADRANTE II

SACO OLIVEROS

HELICOMOTIVACIÓN

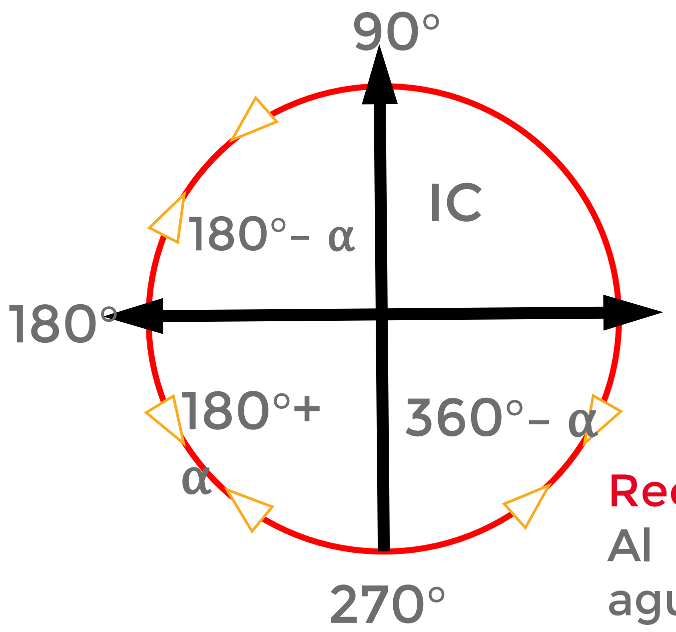
REDUCCIÓN AL PRIMER CUADRANTE II

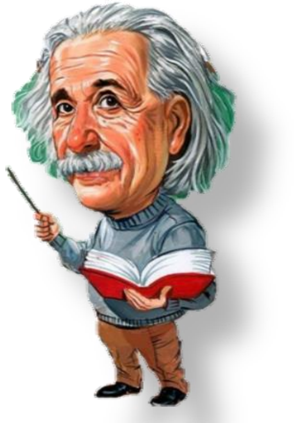
En este capítulo lo que se quiere es determinar el equivalente de un ángulo de cualquier magnitud en términos de un ángulo que pertenece al IC.

Esto se da si usamos ángulos cuadrantales del eje x:

$$\mathrm{RT}(180° \pm \alpha) = \pm RT(\alpha)$$
$$\mathrm{RT}(360° - \alpha) = \pm RT(\alpha)$$

El signo será (±) según el cuadrante al que pertenece el ángulo a reducir y de la RT que lo afecta inicialmente.





Recuerda:
Al ángulo (α) se le considera agudo para la reducción.

HELICOPRACTICE 1

Calcule

tan150°

Resolución

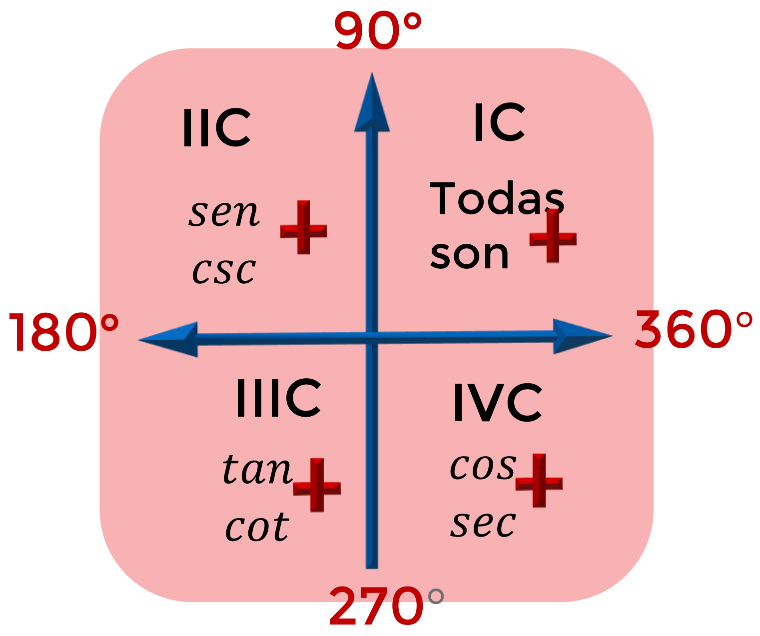
$$\tan 150° = \underbrace{\tan(180° - 30°)}_{\in \text{ IIC}}$$

$$= -\tan 30°$$

$$= -\frac{\sqrt{3}}{3}$$

¡Muy bien!

Recuerda



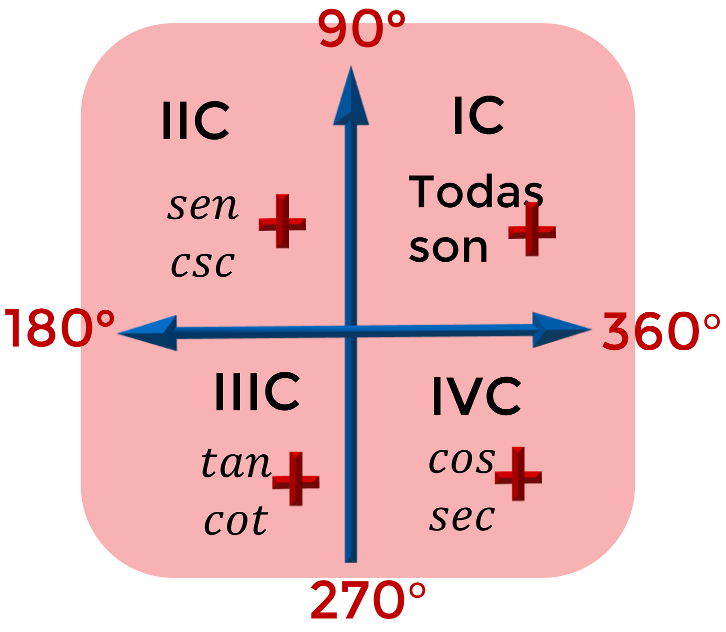
$$RT(180° \pm \alpha) = \pm RT(\alpha)$$
$$RT(360° - \alpha) = \pm RT(\alpha)$$

HELICOPRACTICE 2

Calcule

$\sec 240°$

Recuerda



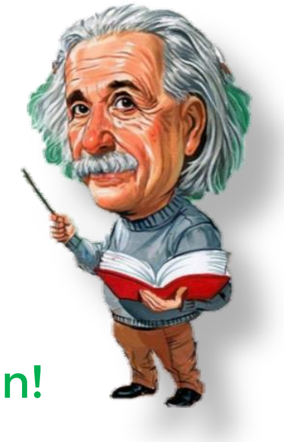
$$\mathrm{RT}(180° \pm \alpha) = \pm RT(\alpha)$$
$$\mathrm{RT}(360° - \alpha) = \pm RT(\alpha)$$

Resolución

$$\sec 240° = \sec(\underbrace{180° + 60°}_{\in \ \mathrm{IIIC}})$$

$$= -\sec 60°$$

$$\boxed{= -2}$$



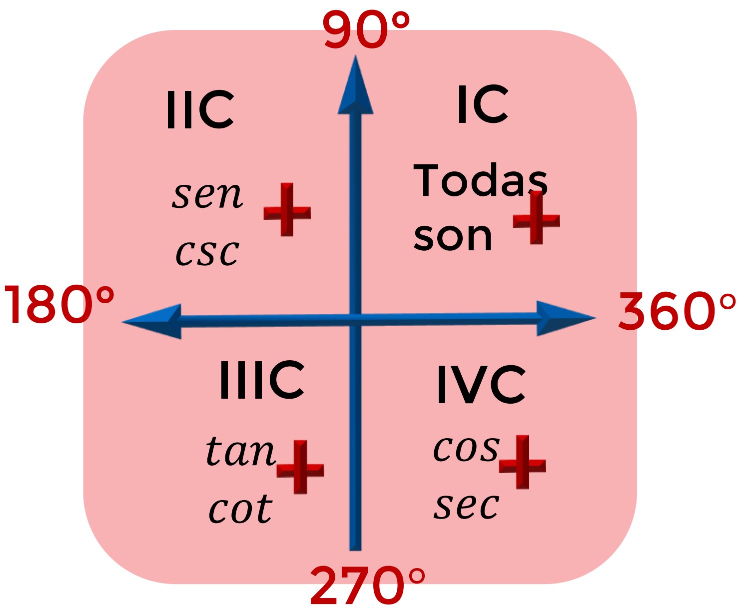
¡Muy bien!

HELICOPRACTICE 3

Efectúe

$$M = 6\csc 217°$$

Recuerda



$$\mathrm{RT}(180° \pm \alpha) = \pm\,\mathrm{RT}(\alpha)$$

$$\mathrm{RT}(360° - \alpha) = \pm\,\mathrm{RT}(\alpha)$$

Resolución

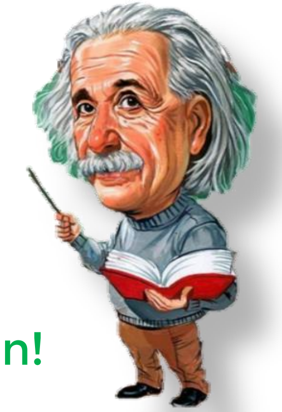
$$M = 6\csc(217°)$$

$$M = 6.\csc(\underbrace{180°+37°}_{\in \mathbf{IIIC}})$$

$$M = -6\csc 37°$$

$$M = -\cancel{6}\left(\frac{5}{\cancel{3}}\right)$$

¡Muy bien!



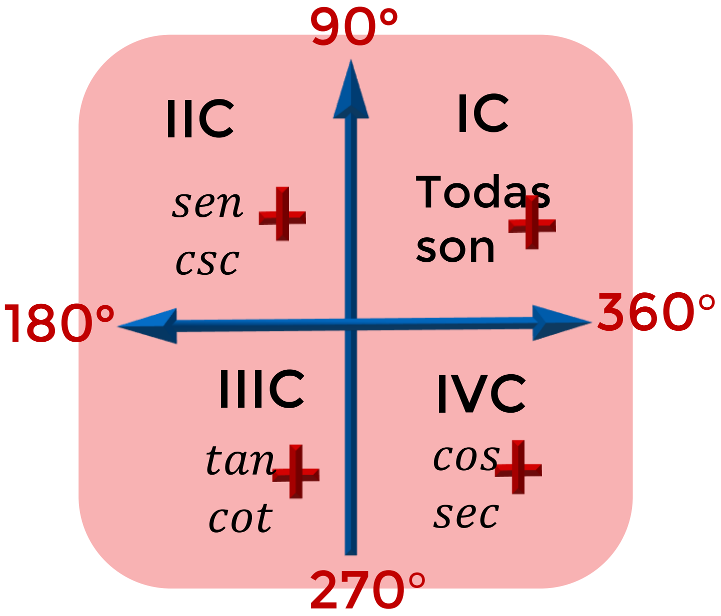
$\boxed{M = -10}$

HELICOPRACTICE 4

Efectúe

$$Q = \sec 300° \,.\, \csc 233°$$

Recuerda



$$RT(180° \pm \alpha) = \pm RT(\alpha)$$
$$RT(360° - \alpha) = \pm RT(\alpha)$$

Resolución

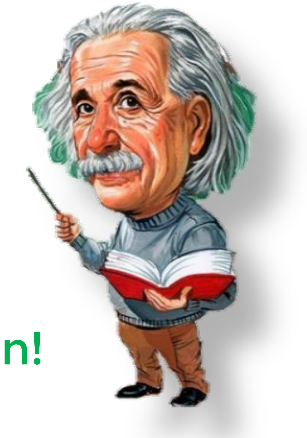
$$Q = \underbrace{\sec(360° - 60°)}_{\in \text{IVC}} \,.\, \underbrace{\csc(180° + 53°)}_{\in \text{IIIC}}$$

$$Q = \sec(60°)(-\csc(53°))$$

$$Q = \cancel{2}\left(-\frac{5}{\cancel{4}}\right)$$

$$Q = -\frac{5}{2}$$

¡Muy bien!

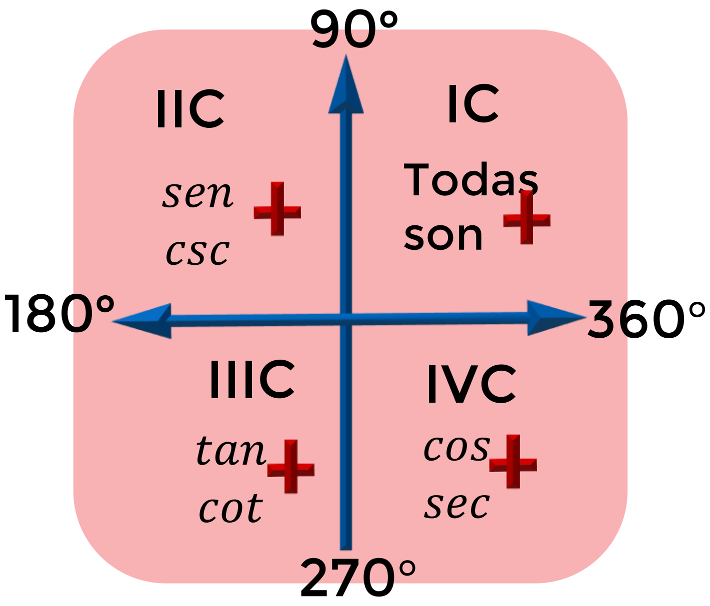


HELICOPRACTICE 5

Efectué

$$P = 5\text{sen}127° - \sqrt{2}\csc 225°$$

Recuerda



$$RT(180° \pm \alpha) = \pm RT(\alpha)$$
$$RT(360° - \alpha) = \pm RT(\alpha)$$

Resolución

$$P = 5\text{sen}\underbrace{(180°-53°)}_{\in \text{IIC}} - \sqrt{2}\csc\underbrace{(180°+45°)}_{\in \text{IIIC}}$$

$$P = 5\text{sen}53° - (-\sqrt{2}\csc 45°)$$

$$P = \cancel{5}\left(\frac{4}{\cancel{5}}\right) + \sqrt{2}\left(\frac{\sqrt{2}}{1}\right)$$

$$P = 4 + 2$$

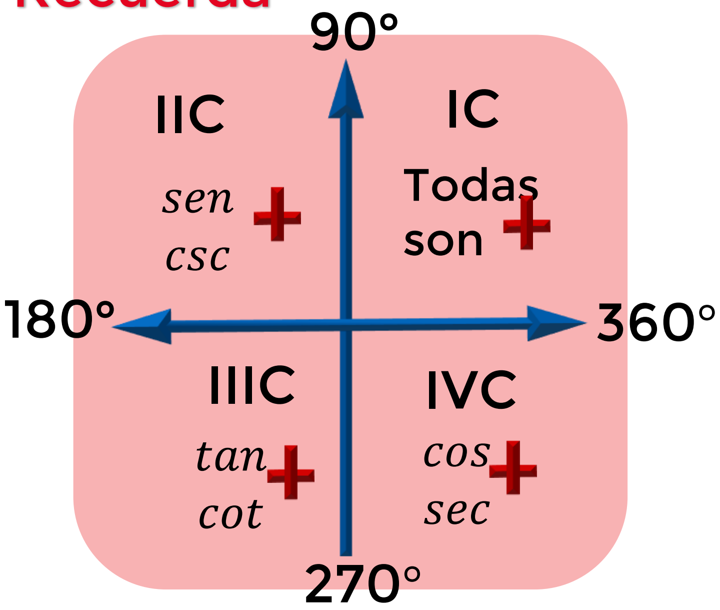
$$\boxed{P = 6}$$

HELICOPRACTICE 6

Efectué

$$R = \text{sen}143° + \cos323°$$

Recuerda



$$RT(180° \pm \alpha) = \pm RT(\alpha)$$
$$RT(360° - \alpha) = \pm RT(\alpha)$$

Resolución

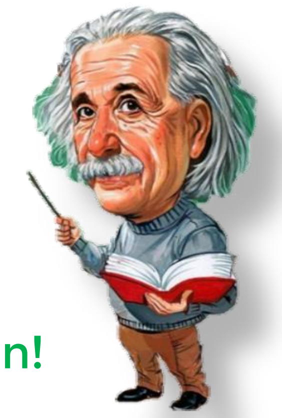
$$R = \underbrace{\text{sen}(180°-37°)}_{\in \text{IIC}} + \underbrace{\cos(360°-37°)}_{\in \text{IVC}}$$

$$R = \text{sen}37° + \cos37°$$

$$R = \frac{3}{5} + \frac{4}{5}$$

$$R = \frac{7}{5}$$

¡Muy bien!

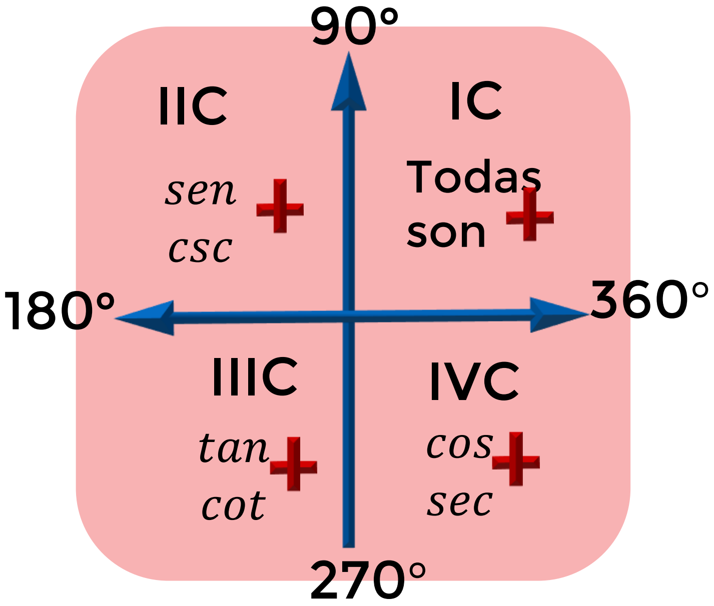


HELICOPRACTICE 7

Efectué

$$T = \frac{\cot^2 330° + \sec^2 135°}{3\csc 217°}$$

Recuerda



$$RT(180° \pm \alpha) = \pm RT(\alpha)$$
$$RT(360° - \alpha) = \pm RT(\alpha)$$

Resolución

$$T = \frac{\cot^2\overbrace{(360° - 30°)}^{\in \text{IVC}} + \sec^2\overbrace{(180° - 45°)}^{\in \text{IIC}}}{3\csc\underbrace{(180° + 37°)}_{\in \text{IIIC}}}$$

$$T = \frac{(-\cot 30°)^2 + (-\sec 45°)^2}{3(-\csc 37°)}$$

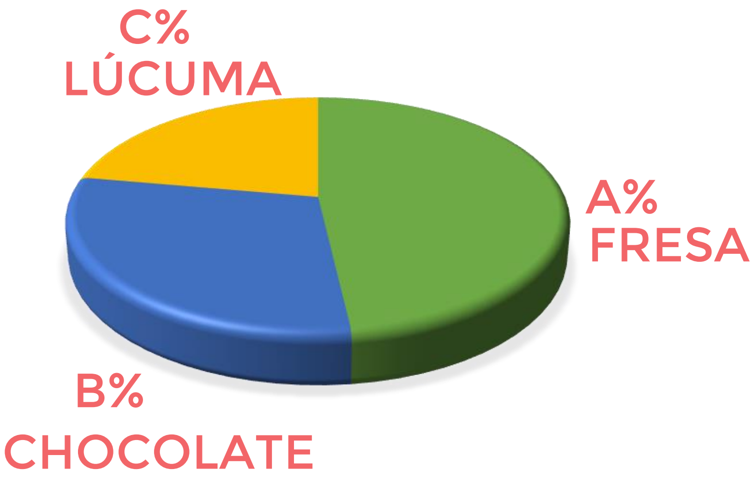
$$T = \frac{\left(-\sqrt{3}\right)^2 + \left(-\sqrt{2}\right)^2}{\cancel{3}\left(-\frac{5}{\cancel{3}}\right)}$$

$$T = \frac{3 + 2}{-5}$$

$$\boxed{T = -1}$$

HELICOPRACTICE 8

El siguiente gráfico muestra los resultados porcentuales de una encuesta sobre las preferencias con respecto a tres sabores de helados. Determine el porcentaje de preferencia que tiene cada sabor de helado.



Donde:
A = 50cot225°
B = 60sen150°
C = $10sec^2 135°$

Resolución

$A = 50\cot 225° = 50\cot\underbrace{(180°+45°)}_{\in \text{IIIC}} = 50\cot 45°$

$A = 50(1)$ $\boxed{A = 50\%}$

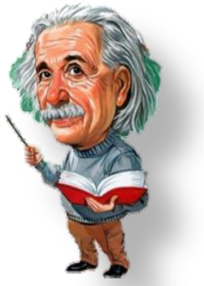
$B = 60\text{sen}150° = 60\text{sen}\underbrace{(180°-30°)}_{\in \text{IIC}} = 60\text{sen}30°$

$B = \cancel{60}\left(\frac{1}{\cancel{2}}\right)$ $\boxed{B = 30\%}$

$C = 10\sec^2 135° = 10\text{Sec}^2\underbrace{(180° - 45°)}_{\in \text{IIC}} = 10(-\sec 45°)^2$

$C = 10(-\sqrt{2})^2$ $\boxed{C = 20\%}$

¡Muy bien!



COLEGIOS
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MUCHAS GRACIAS POR TU ATENCIÓN

Tu curso amigo

TRIGONOMETRÍA