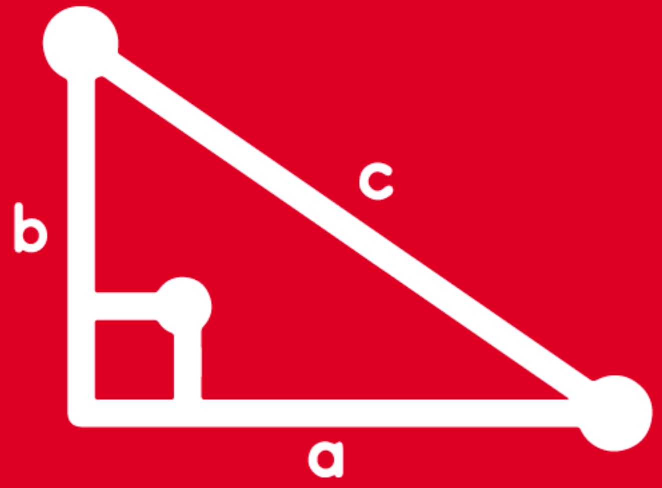
TRIGONOMETRY

Tomo 7 y 8

2nd
SECONDARY



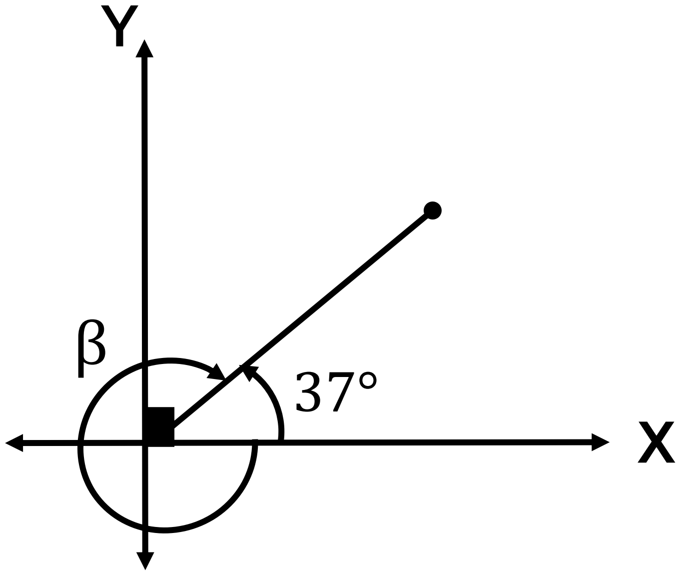
ADVISORY

SACO OLIVEROS

HELICOPRACTICE 1

Del gráfico, efectúe

$$T = \operatorname{sen}\beta + \cos\beta$$



RECORDAR

$$\boxed{RT(\alpha) = RT(\beta)}$$

Resolución:

Del gráfico β y 37° son ángulos coterminales, entonces se cumple que:

$$\operatorname{sen}\beta = \operatorname{sen}37^\circ$$
$$\cos\beta = \cos37^\circ$$

Reemplazando en T:

$$T = \operatorname{sen}\beta + \cos\beta$$

$$T = \operatorname{sen}37^\circ + \cos37^\circ$$

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

$$\therefore T = \frac{7}{5}$$

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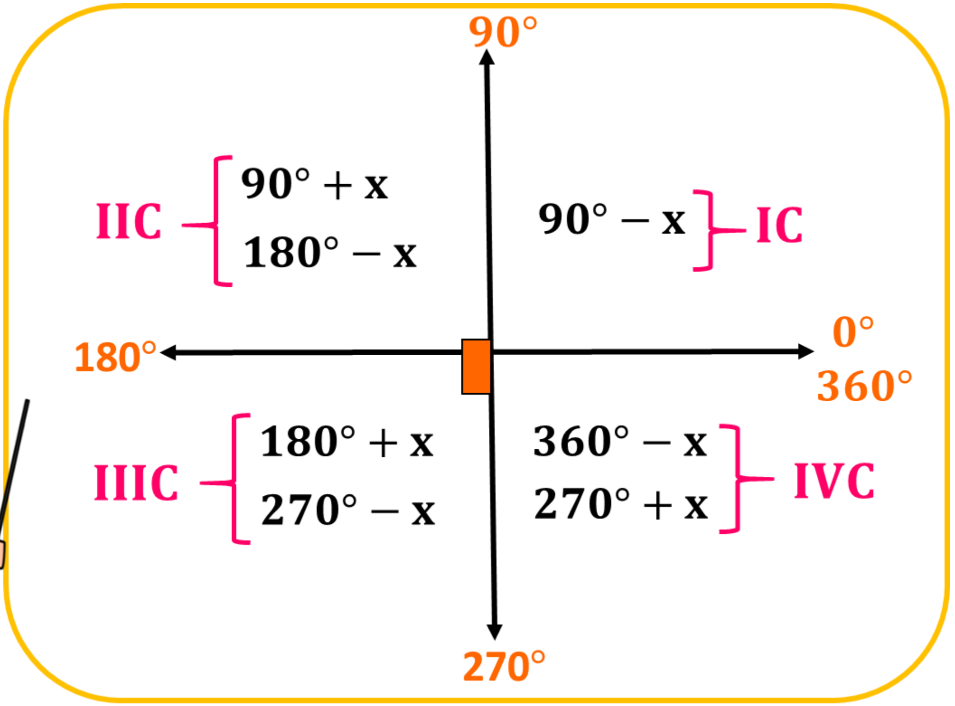
HELICOPRACTICE 2

Simplifique $P = 3\text{sen}(180°-x) - 5\text{sen}(360°-x)$



Resolución:

Del dato:

$$P = 3\underbrace{\text{sen}(180°-x)}_{IIC} - 5\underbrace{\text{sen}(360°-x)}_{IVC}$$

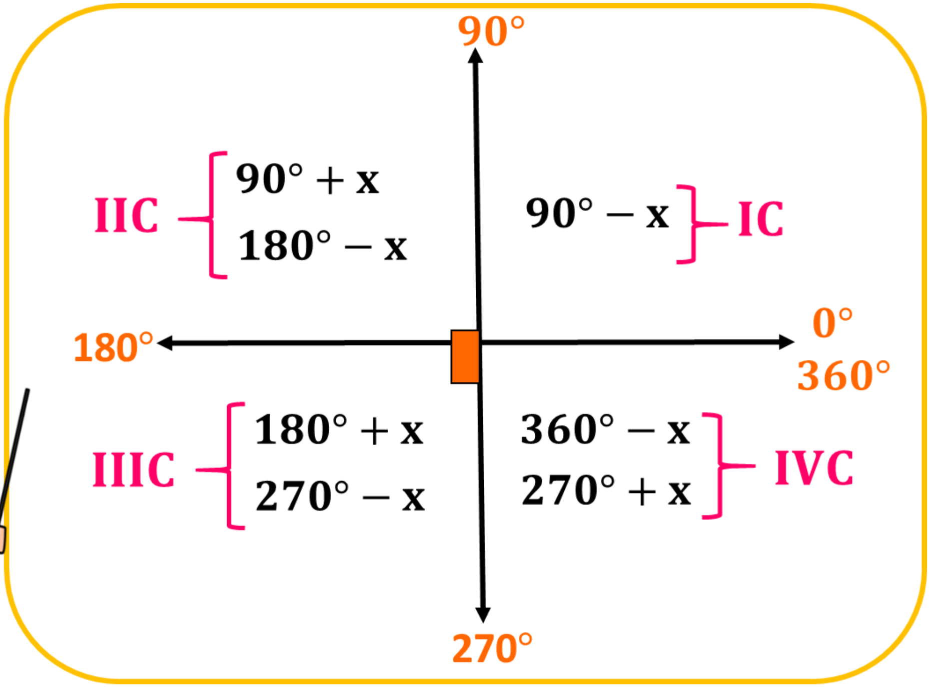
$$P = +3\,\text{senx} - (-5\ \text{senx})$$

$$P = 3\text{senx} + 5\text{senx}$$

$$\therefore\ P = 8\text{senx}$$

HELICOPRACTICE 3

Simplifique $P = 8\sec(90° + x) - \sec(270° - x)$



Resolución:

Del dato:

$$P = 8\underbrace{\sec(90° + x)}_{\text{IIC}} - \underbrace{\sec(270° + x)}_{\text{IVC}}$$

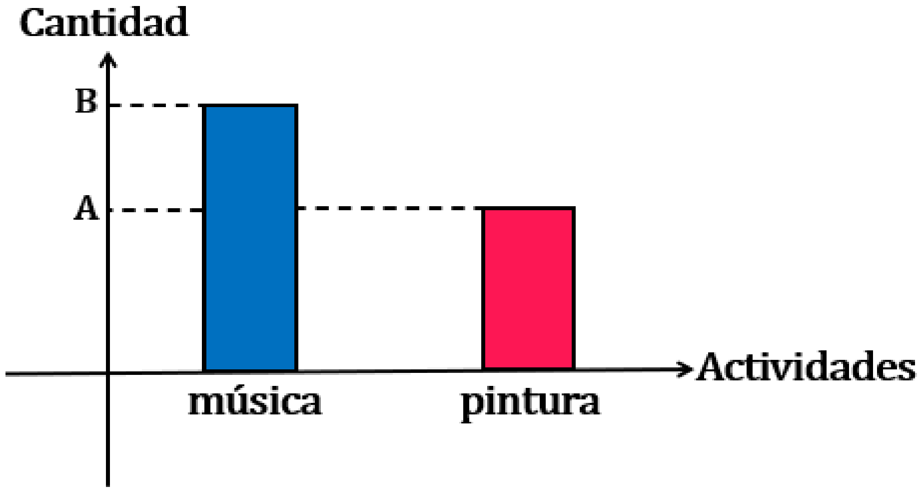
$$P = -8\csc x - (+\csc x)$$

$$P = -2\csc x - \csc x$$

$$\therefore\ P = -10\csc x$$

HELICOPRACTICE 4

La gráfica representa la cantidad de alumnos inscritos en la actividades realizadas por una institución educativa durante el ciclo de verano 2020. Si cada alumno se inscribe en una sola actividad. ¿ Cuántos alumnos se inscribieron en total?



Donde:

$A = 20.\cos 300°$

$B = 5\sqrt{3}.\cot 210°$

Resolución:

$A = 20.\cos\underbrace{300°}_{IVC}$

$A = 20.\cos(360° - 60°)$

$A = 20.(\cos 60°)$

$A = 20.\left(\frac{1}{2}\right)$

$A = 10$

$B = 5\sqrt{3}.\cot\underbrace{210°}_{IIIC}$

$B = 5\sqrt{3}.\cot(180° + 30°)$

$B = 5\sqrt{3}.\cot(30°)$

$B = 5\sqrt{3}.(\sqrt{3})$

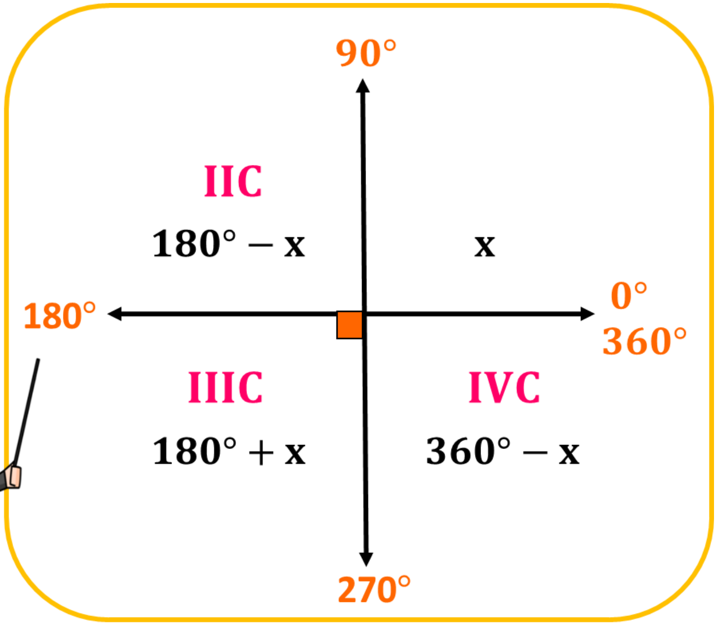
$B = 15$

$\therefore$ Total : 25 alumnos

HELICOPRACTICE 5

Reduzca

$$R = \text{sen}150° \cdot \cos 240°$$



Resolución:

$$R = \underbrace{\text{sen}150°}^{\text{IIC}} \cdot \underbrace{\cos 240°}^{\text{IIIC}}$$

$$R = \text{sen}(180°-30°).\ -\{\cos(180°+60°)\}$$

$$R = \text{sen}30° \cdot (-\cos 60°)$$

$$R = \left(\frac{1}{2}\right) . \left(-\frac{1}{2}\right)$$

$$\boxed{\therefore\ R = -\frac{1}{4}}$$

HELICOPRACTICE 6

Simplifique $E = \cos x\,(1 + \sec x) - \cos x$

Resolución:

$$E = \cos x\,(1 + \sec x) - \cos x$$

$$E = \cos x . 1 + \underbrace{\cos x .\ \sec x}_{1} - \cos x$$

$$E = \cancel{\cos x} + 1 -$$

$$\cos x$$

$$\boxed{\therefore\ E = 1}$$

Recuerda:

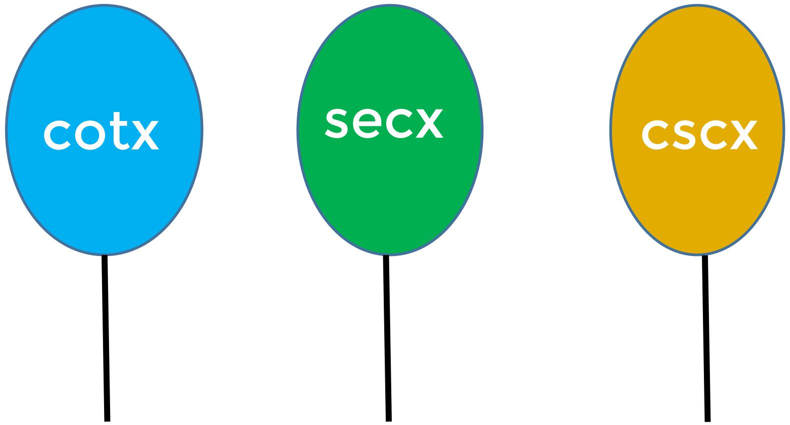
$$\boxed{\cos x . \sec x = 1}$$

HELICOPRACTICE 7

Lucía debe elegir un globo del color. Ayúdelo a resolver el siguiente ejercicio e indique cuál es el globo correcto para pepito.

Reduzca:

$$P = \frac{cosx + 1}{senx} - cotx$$



Resolución:

Aplicamos la Identidad por División

$$\boxed{\cot x = \frac{\cos x}{\operatorname{sen} x}}$$

$$P = \frac{cosx + 1}{senx} - \frac{cosx}{senx}$$

$$P = \frac{\cancel{cosx} + 1 - \cancel{cosx}}{\operatorname{sen}x} \Rightarrow P = \overbrace{\frac{1}{senx}}^{\text{Id. Recíproca}}$$

$$\boxed{P = \csc x}$$

∴ Lucía debe elegir el globo anaranjado.

$\cos^2\theta$

HELICOPRACTICE 8

Simplifique E = (cosθ + senθ . tanθ) cosθ

Resolución:

E = (cosθ + senθ . tanθ) cosθ

$E = \cos^2\theta + \operatorname{sen}\theta . \tan\theta . \cos\theta$

$E = \cos^2\theta + \operatorname{sen}\theta . \dfrac{\operatorname{sen}\theta}{\cancel{\cos\theta}} . \cancel{\cos\theta} .$

$E = \cos^2\theta + \operatorname{sen}^2\theta$

$\therefore E = 1$

Recuerda:

Id. Por división

$$\tan\theta = \frac{\operatorname{sen}\theta}{\cos\theta}$$

Id. Pitagórica

$$\operatorname{sen}^2\theta + \cos^2\theta = 1$$

HELICOPRACTICE 9

Demostrar $P = (1 - \operatorname{sen}^2\theta)(1 + \cot^2\theta) = \cot^2\theta$

Resolución:

Vamos a reemplazar:

$$P = \underbrace{(1 - \operatorname{sen}^2\theta)}\underbrace{(1 + \cot^2\theta)} = \cot^2\theta$$

$$(\cos^2\theta)(\csc^2\theta)$$

$$(\cos^2\theta)\left(\frac{1}{\operatorname{sen}^2\theta}\right)$$

$$P = \frac{\cos^2\theta}{\operatorname{sen}^2\theta} \Rightarrow \therefore P = \cot^2\theta$$

Recuerda:

Id. Pitagórica

$$\operatorname{sen}^2\theta + \cos^2\theta = 1$$

$$\boxed{\cos^2\theta = 1 - \operatorname{sen}^2\theta}$$

$$\boxed{1 + \cot^2\theta = \csc^2\theta}$$

Id. Recíproca

$$\boxed{\operatorname{sen}\theta . \csc\theta = 1}$$

$$\csc\theta = \frac{1}{\operatorname{sen}\theta}$$

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HELICOPRACTICE 10

Reduzca $C = (2\,\text{sen}x + \cos x)^2 + (\text{sen}x - 2\cos x)^2$

Resolución:

$$C = \underbrace{(2\,\text{sen}x + \cos x)^2}_{} + \underbrace{(\text{sen}x - 2\cos x)^2}_{}$$

$$C = 4\text{sen}^2x + \cancel{2(2\text{sen}x)(\cos x)} + \cos^2x + \text{sen}^2x \cancel{-2(\text{sen}x)(2\cos x)} + 4\cos^2x$$

$$C = 5\text{sen}^2x + 5\cos^2x$$

$\boxed{\text{Vamos a factorizar:}}$

$$C = 5\underbrace{(\text{sen}^2x + \cos^2x)}_{1}$$

$$\boxed{C = 5}$$

Recuerda:

$$\boxed{(a+b)^2 = a^2 + 2ab + b^2}$$