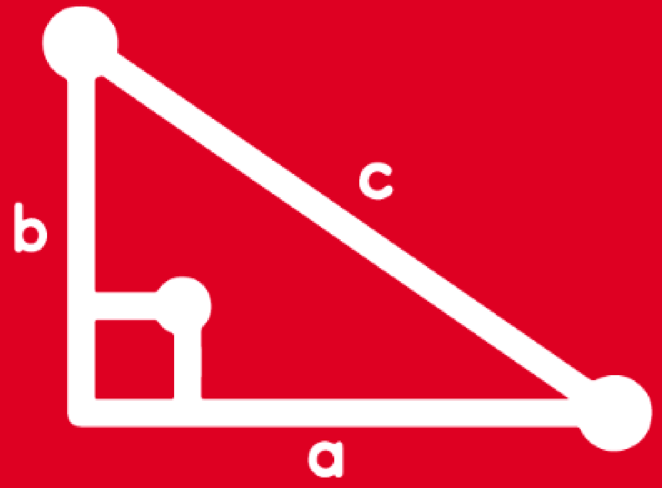
TRIGONOMETRY

Tomo 05

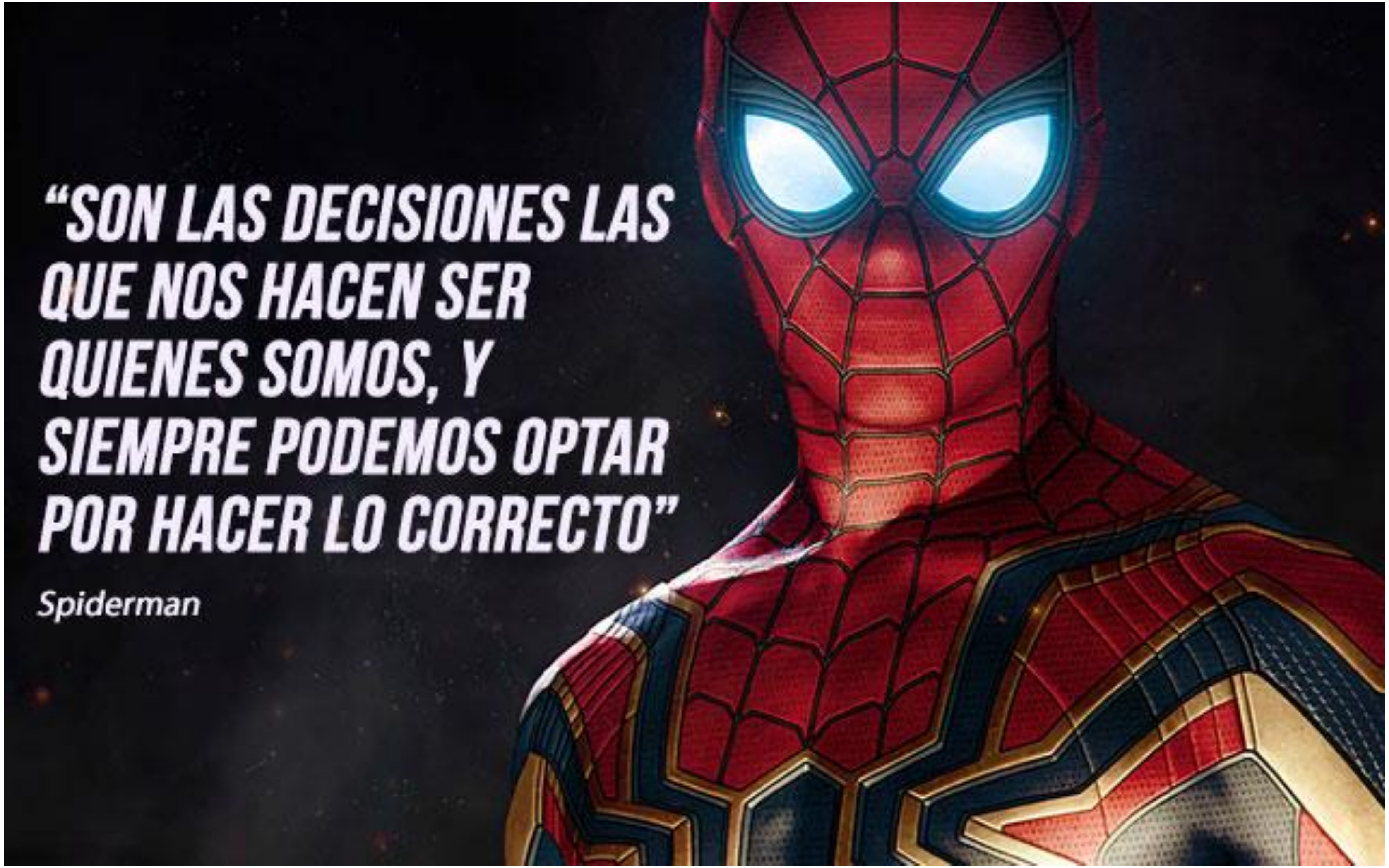
3rd
SECONDARY



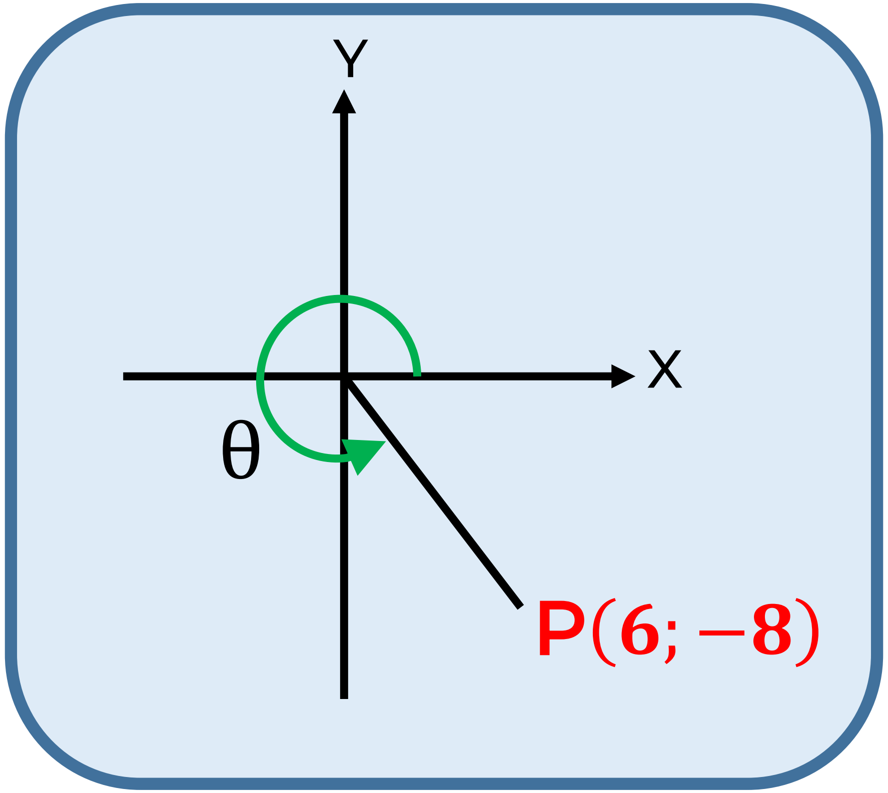
FEEDBACK

SACO OLIVEROS

HELICO-MOTIVACIÓN



1 Del gráfico, calcule 10senθ.



Recordar:

$r = \sqrt{x^2 + y^2}$ $\quad sen\theta = \frac{y}{r}$

Resolución:

Del punto P, tenemos:

$x = 6\,;\, y = -8$

$$r = \sqrt{(6)^2 + (-8)^2}$$

$$r = \sqrt{36 + 64} = 10$$

Calculamos:

$$10sen\theta = \cancel{10}\left(\frac{-8}{\cancel{10}}\right) = -8$$

2 Si el punto T(5;-12) pertenece al lado final del ángulo en posición normal β, efectúe K = cscβ + cotβ.

Recordar:

$\csc\beta = \frac{r}{y}$ $\quad \cot\beta = \frac{x}{y}$

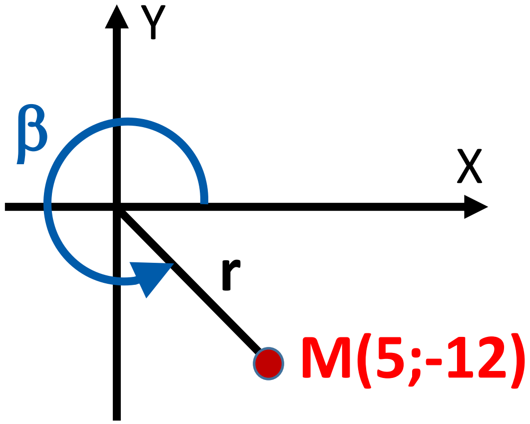
Recordar:

$r = \sqrt{x^2 + y^2}$

Resolución:

Del punto T, tenemos:

$x = 5\,;\, y = -12$



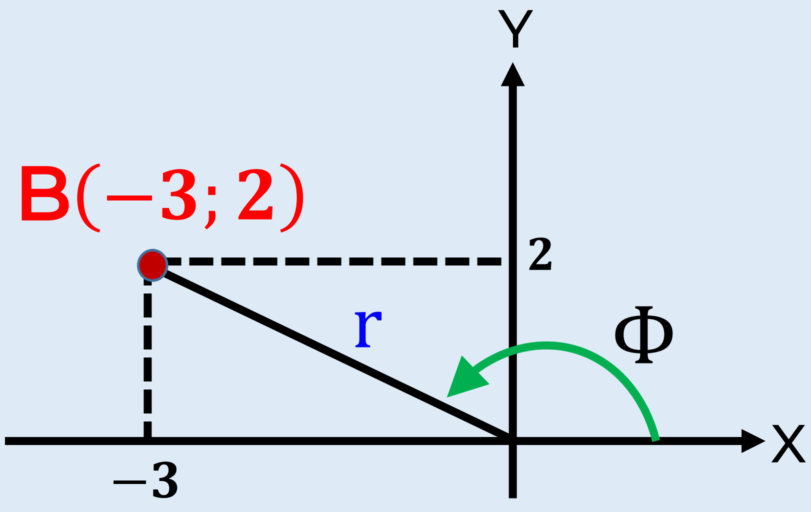
$r = \sqrt{(5)^2 + (-12)^2}$

$r = \sqrt{25 + 144} = \sqrt{169} \Rightarrow r = 13$

Efectuamos:

$K = \csc\beta + \cot\beta = \left(\frac{13}{-12}\right) + \left(\frac{5}{-12}\right) = \frac{\cancel{18}}{\cancel{-12}} = -\frac{3}{2}$

3 Del gráfico, efectúe K = senΦ·cosΦ



Recordar:

$\operatorname{sen}\Phi = \dfrac{y}{r}$ $\quad \cos\Phi = \dfrac{x}{r}$

Resolución:

Del punto B, tenemos:

$x = -3\ ;\ y = 2$

$$\boxed{r = \sqrt{x^2 + y^2}} \Rightarrow r = \sqrt{(-3)^2 + (2)^2}$$

$$r = \sqrt{9+4}$$

$$r = \sqrt{13}$$

Efectuamos:

$$\operatorname{sen}\Phi.\cos\Phi = \left(\frac{2}{\sqrt{13}}\right)\left(\frac{-3}{\sqrt{13}}\right) \boxed{= -\frac{6}{13}}$$

4

Si α ∈ IIC y θ ∈ IVC, indique los signos de:

$$P = \cos\theta \,.\, \csc\alpha \qquad Q = \frac{\operatorname{sen}\theta}{\sec\alpha}$$

Recordar:

90°

IIC: $\left.\begin{matrix} sen \\ csc \end{matrix}\right\}(+)$

IC: Todas las RT son (+)

180° — 0° / 360°

IIIC: $\left.\begin{matrix} tan \\ cot \end{matrix}\right\}(+)$

IVC: $\left.\begin{matrix} cos \\ sec \end{matrix}\right\}(+)$

270°

Resolución:

$$P = \cos\theta \,.\, \csc\alpha$$

$$P = (+).(+)$$

$$\boxed{P = +}$$

$$Q = \frac{\operatorname{sen}\theta}{\sec\alpha}$$

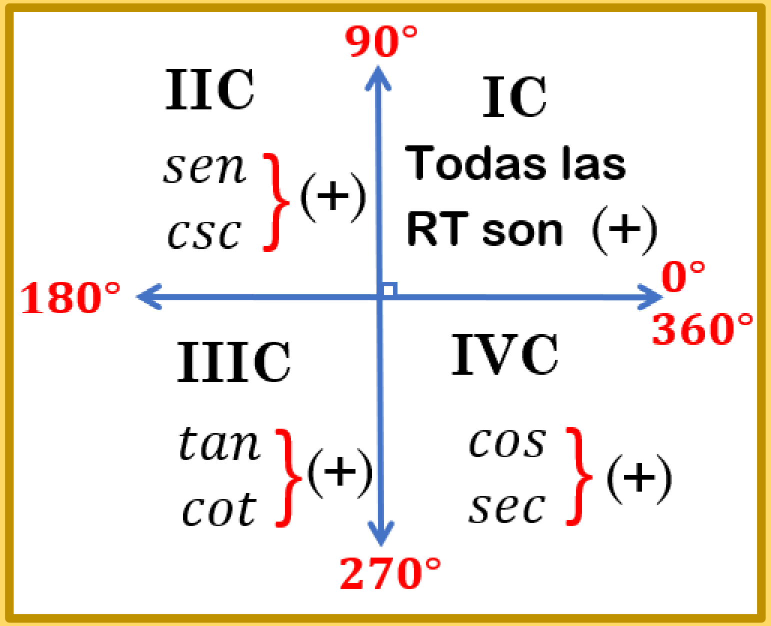
$$Q = \frac{(-)}{(-)}$$

$$\boxed{Q = +}$$

5 Indique los signos de A y B.

$$A = sen170°.cos70°$$

$$B = \frac{tan240°.\ csc310°}{sec295°}$$



Resolución:

$$A = sen170°.cos70°$$

$$A = (+).(+)$$

$$A = +$$

$$B = \frac{tan240°.\ csc310°}{sec295°}$$

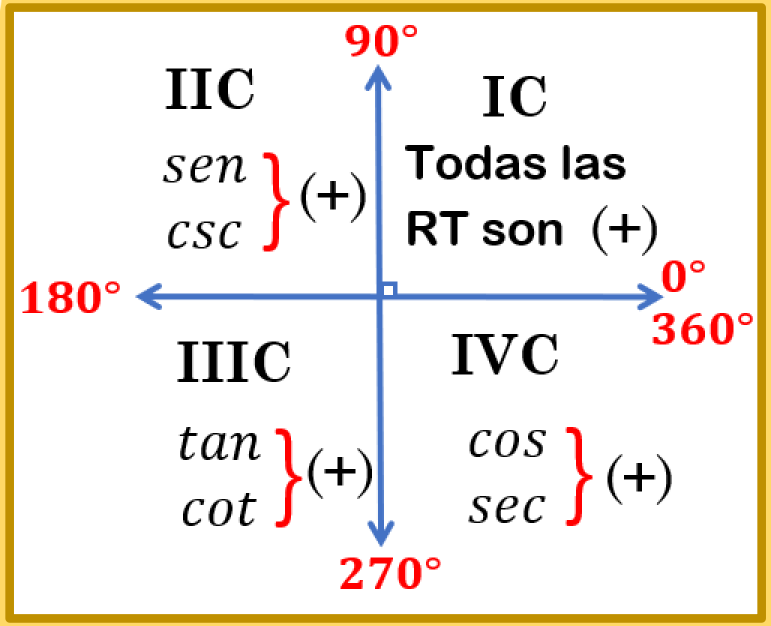
$$B = \frac{(+).(-)}{(+)}$$

$$B = -$$

6 Indique el cuadrante al cuál pertenece β si

$$\tan\beta \cdot sen140° > 0$$

$$\csc 280° \cdot \cos\beta < 0$$



Resolución:

$$\underbrace{\tan\beta}_{(+)} \cdot \underbrace{sen140°}_{(+)} \underbrace{> 0}_{=\,(+)}$$

$\tan\beta = (+)$ $\quad \beta \in IC \quad \vee \quad \beta \in IIIC$

$$\underbrace{\csc 280°}_{(-)} \cdot \underbrace{\cos\beta}_{(+)} \underbrace{< 0}_{=\,(-)}$$

$\cos\beta = (+)$ $\quad \beta \in IC \quad \vee \quad \beta \in IVC$

$\therefore \boxed{\beta \in IC}$

7 Efectúe

$$A = \frac{5csc90° - 3cos360°}{sec180° + cot270°}$$

Recordar:

csc90° = 1 *cos360° = 1*

sec180° = -1 *cot270° = 0*

Resolución:

$$A = \frac{5csc90° - 3cos360°}{sec180° + cot270°}$$

$$A = \frac{5(1) - 3(1)}{(-1) + (0)}$$

$$A = \frac{5 - 3}{-1}$$

$\therefore$ **A = - 2**

8

Indique cuál de los siguientes ángulos son coterminales.

a. 250° y -130°

b. 800° y 80°

c. 430° y 170°

Recordar:

$$\alpha - \beta = 360°k \,, \forall\, k \in \mathbb{Z} - \{0\}$$

Resolución:

a. 250° y -130°

250° - (-130°) = 380° (No son ángulos coterminales)

b. 800° y 80°

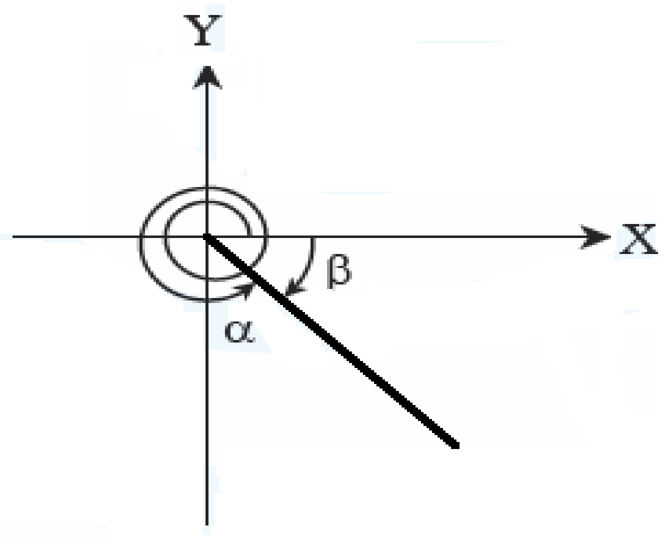
800° - 80° = 720° (Si son ángulos coterminales)

c. 430° y 170°

430° - 170° = 260° (No son ángulos coterminales)

9

Del gráfico, simplifique $E = 3\,\dfrac{\sec\alpha}{\sec\beta} + 5\tan\alpha.\cot\beta$



Resolución:

$\boxed{\cot\alpha = \cot\beta}$ $\boxed{\sec\alpha = \sec\beta}$

$$E = 3\,\frac{\sec\alpha}{\sec\beta} + 5\tan\alpha.\cot\beta$$

$$E = 3\,\frac{\cancel{\sec\alpha}}{\cancel{\sec\alpha}} + \underbrace{5\tan\alpha.\cot\alpha}_{1}$$

$$E = 3 + 5$$

$$\therefore \boxed{E = 8}$$

Recordar:

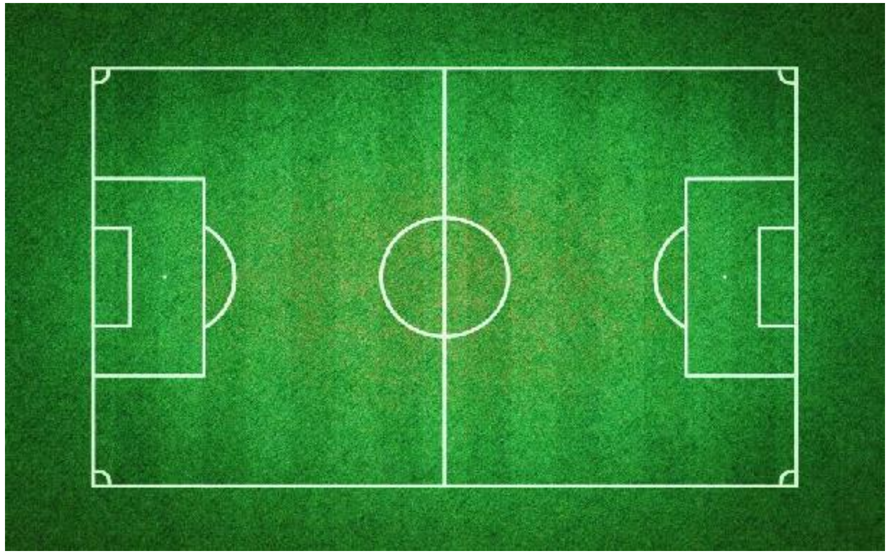
$$RT(\alpha) = RT(\beta)$$

10

Víctor es un joven deportista que recorre el campo deportivo de su distrito tres veces ¿Cuántos metros recorrerá?

60(csc90°.cos360°)m

30(sen270°.cos180°)m



Recordar:

csc90° = 1 | *cos360° = 1*

cos180° = -1 | *sen270° = -1*

Resolución:

Dato: recorre 1 vuelta por día

- $60(\csc 90°.\cos 360°)m$

  $60(1).(1) = 60m$

- $30(\text{sen}270°.\cos 180°)m$

  $30(-1).(-1) = 30m$

$2p = 2(60m) + 2(30m)$

$2p = 180m$

Recorrido total = 3(180m) = 540m