1 Del gráfico, efectúe

$$N = \csc\beta - \cot\beta$$

(5; 12)

r = 13

β

Recordar:

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

RESOLUCIÓN

Calculando el radio vector

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

$$r = \sqrt{5^2 + 12^2} \quad \Rightarrow \quad r = \sqrt{169}$$

$$\underbrace{25} \quad \underbrace{144}$$

$$r = 13$$

x = 5	y = 12	r = 13

Piden: $N = \csc\beta - \cot\beta$

$$N = \frac{13}{12} - \frac{5}{12} \quad \Rightarrow \quad N = \frac{\cancel{8}^{2}}{\cancel{12}_{3}} \quad \therefore \quad N = \frac{2}{3}$$
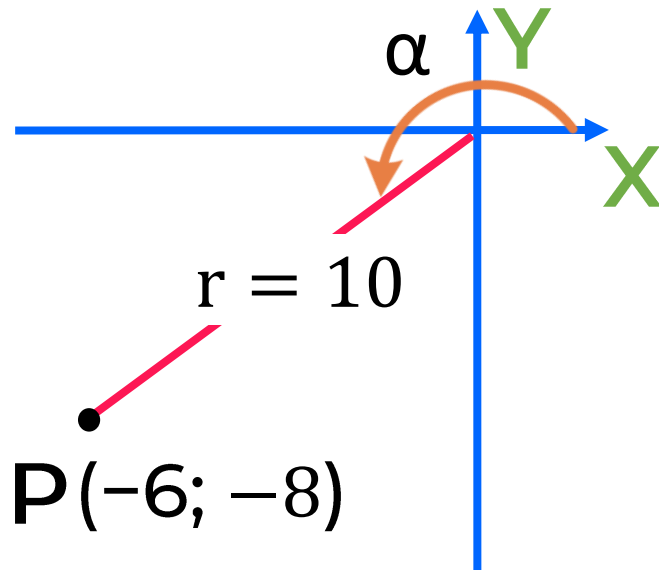
2 **Si el punto P$(-6; -8)$ pertenece al lado final del ángulo α en posición normal. Calcule: E = 16cotα – 18secα**

RESOLUCIÓN

α Y

X

r = 10

P(–6; –8)

• Calculando el radio vector

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

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

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

$$r = \sqrt{100}$$

➡ $r = 10$

$x = -6$	$y = -8$	$r = 10$

Piden: E = 16cotα – 18secα

➡ $E = \overset{2}{\cancel{16}}\left(\dfrac{-6}{\underset{1}{\cancel{-8}}}\right) - \overset{3}{\cancel{18}}\left(\dfrac{10}{\underset{1}{\cancel{-6}}}\right)$

➡ $E = 12 + 30$

∴ $E = 42$

3 Del gráfico, calcule el valor de a si ; $\cot\alpha = -\dfrac{3}{4}$

$(a \; ; \; 4-a)$

α

Y

X
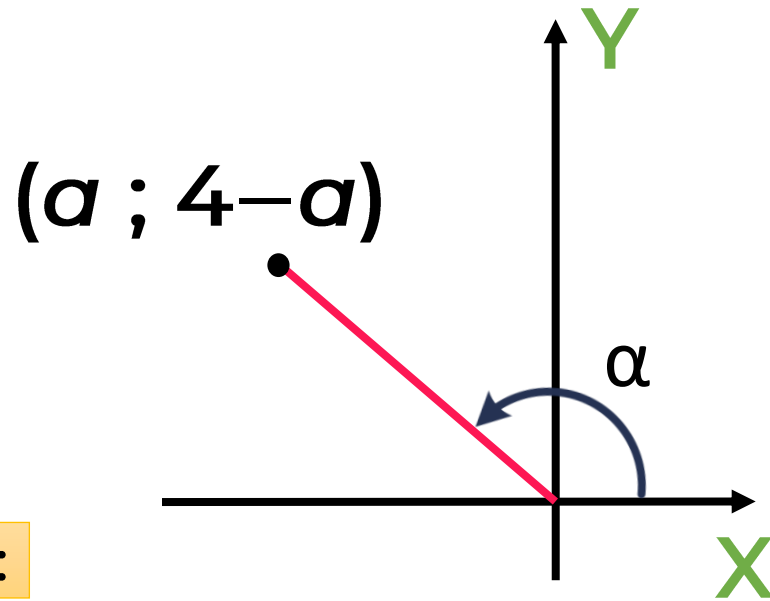
Recordar:

$$\cot\alpha = \dfrac{x}{y}$$

RESOLUCIÓN

• **Del gráfico:**

$$\cot\alpha = \dfrac{a}{4-a} \quad \text{............(I)}$$

• **Del dato:**

$$\cot\alpha = -\dfrac{3}{4} \quad \text{...........(II)}$$

De (I) y (II):

$$\dfrac{a}{4-a} = -\dfrac{3}{4} \quad \Longrightarrow \quad 4a = -12 + 3a$$

$$\therefore \boxed{a = -12}$$

4 **Del gráfico, determine el signo de:**

$$E = \frac{csc\theta.sec\alpha}{tan\beta}$$

Recordar:

IIC	IC
$\left.\begin{array}{l} sen \\ csc \end{array}\right\}(+)$	Todas las RT son (+)

90°
180°   0° 360°

IIIC	IVC
$\left.\begin{array}{l} tan \\ cot \end{array}\right\}(+)$	$\left.\begin{array}{l} cos \\ sec \end{array}\right\}(+)$

270°

RESOLUCIÓN

- Del gráfico:

$\alpha \in IC$	$\beta \in IIC$	$\theta \in IVC$

- Piden signo:

$$E = \frac{csc\theta.sec\alpha}{tan\beta}$$

$$E = \frac{(-)(+)}{(-)} \quad \Rightarrow \quad E = \frac{(-)}{(-)}$$

$$\therefore \quad E = (+)$$
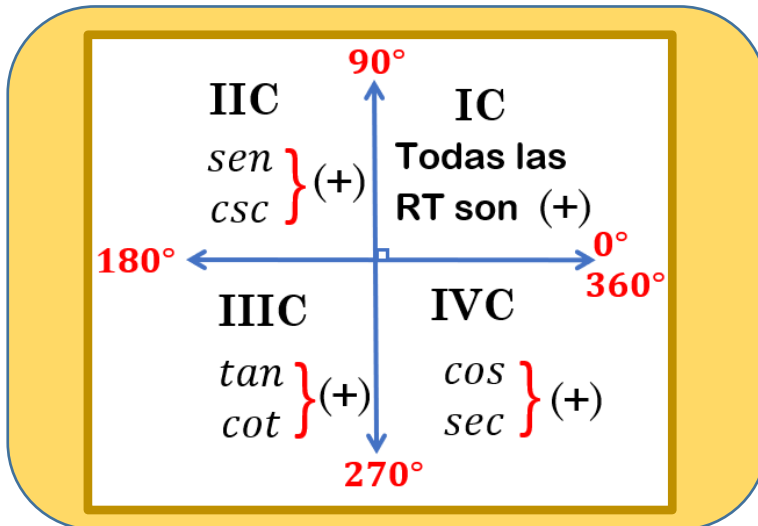
5 Si α ∈ IIC y θ ∈ IIIC, determine el signo de:

$$A = \frac{\text{sen}\alpha}{\tan\theta}$$

$$B = \tan^2\alpha \cdot \csc^3\theta$$

Recordar:

IIC

$\left.\begin{array}{c}sen \\ csc\end{array}\right\}$ (+)

IC

Todas las RT son (+)

180° ← → 0° / 360°

90°

IIIC

$\left.\begin{array}{c}tan \\ cot\end{array}\right\}$ (+)

IVC

$\left.\begin{array}{c}cos \\ sec\end{array}\right\}$ (+)

270°

RESOLUCIÓN

• Piden signo:

$$A = \frac{\text{sen}\alpha}{\tan\theta}$$

$$A = \frac{(+)}{(+)}$$

$$A = (+)$$

$$B = \tan^2\alpha \cdot \csc^3\theta$$

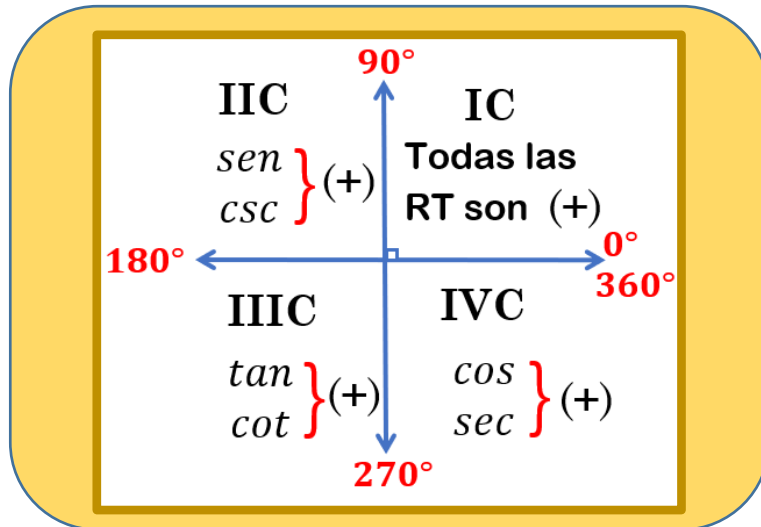$$B = (-)^2(-)^3$$

$$B = (+)(-)$$

$$B = (-)$$

∴ (+) ; (−)

6 **Determine el signo en cada caso:**

$$M = \tan 84°.\text{sen}179°$$

$$N = \frac{\sec 220°.\csc 70°}{\text{sen}280°}$$

Recordar:

IIC	**IC**
$\left.\begin{array}{c}sen\\csc\end{array}\right\}(+)$	Todas las RT son (+)
IIIC	**IVC**
$\left.\begin{array}{c}tan\\cot\end{array}\right\}(+)$	$\left.\begin{array}{c}cos\\sec\end{array}\right\}(+)$

90° · 180° · 360° · 0° · 270°

RESOLUCIÓN

• Piden signo:

$$M = \tan\underbrace{84°}_{IC}.\text{sen}\underbrace{179°}_{IIC} = (+)(+)$$

➡ $M = (+)$

$$N = \frac{\sec\overbrace{220°}^{IIIC}.\csc\overbrace{70°}^{IC}}{\text{sen}\underbrace{280°}_{IVC}} = \frac{(\cancel{-})(+)}{(\cancel{-})}$$

➡ $N = (+)$ ∴ (+); (+)

7 Si $270° < \theta < 360°$, determine le signo de

$$P = \cos\left(\frac{\theta}{2}\right) . \tan\left(\frac{\theta}{3}\right)$$

Recordar:

IIC   IC

$\left.\begin{array}{c} sen \\ csc \end{array}\right\}(+)$ Todas las RT son (+)

$180°$ $0°$ $360°$

IIIC   IVC

$\left.\begin{array}{c} tan \\ cot \end{array}\right\}(+)$ $\left.\begin{array}{c} cos \\ sec \end{array}\right\}(+)$

$90°$ $270°$
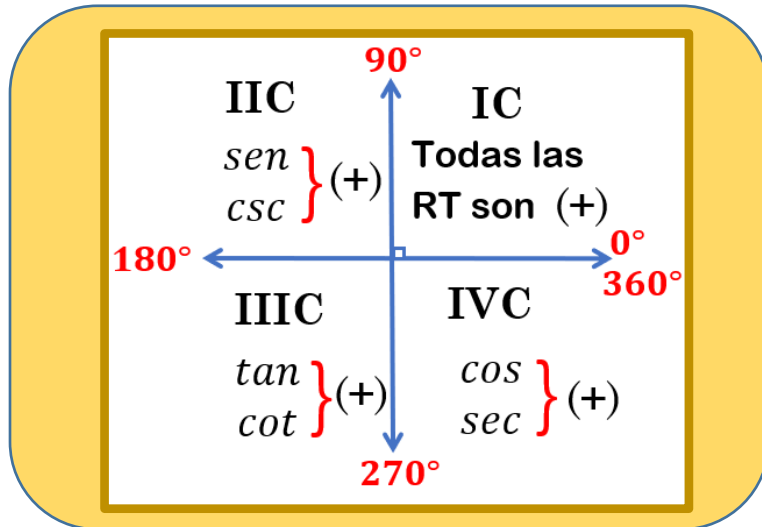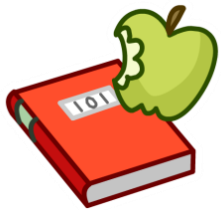
RESOLUCIÓN

I) $270° < \theta < 360°$ $\Rightarrow$ $135° < \left(\frac{\theta}{2}\right) < 180°$

    $\underbrace{\qquad}_{IIC}$

$\Rightarrow \cos\left(\frac{\theta}{2}\right) = (-)$

II) $270° < \theta < 360°$ $\Rightarrow$ $90° < \left(\frac{\theta}{3}\right) < 120°$

    $\underbrace{\qquad}_{IIC}$

$\Rightarrow \tan\left(\frac{\theta}{3}\right) = (-)$

Piden signo de $P = \cos\left(\frac{\theta}{2}\right) . \tan\left(\frac{\theta}{3}\right)$

$\Rightarrow P = (-)(-)$ $\therefore$ P = (+)

8 **Efectúe**

$$W = (\csc 270° + \sec 180°)^2 \cdot (\sen 90° + \cos 360°)^3$$

RESOLUCIÓN

Recordar
:

Usando las RT de ángulos cuadrantales:

$$W = ((-1) + (-1))^2 \cdot ((1) + (1))^3$$

$$W = (-2)^2 \cdot (2)^3$$

$$W = (4)(8)$$

∴ W = 32

RT ∢	0°	90°	180°	270°	360°
sen	0	1	0	−1	0
cos	1	0	−1	0	1
tan	0	ND	0	ND	0
cot	ND	0	ND	0	ND
sec	1	ND	−1	ND	1
csc	ND	1	ND	−1	ND

9 **Calcule el valor de x si**

2x cos360° + 3csc90° = sen270° − *x* tan180°

RESOLUCIÓN

Usando las RT de ángulos cuadrantales:

$$2x\ (1) + 3(1) = (-1) - x\ (0)$$

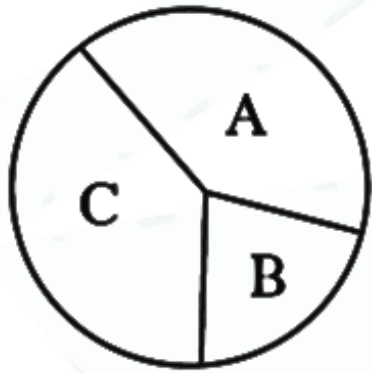$$2x + 3 = -1$$

$$2x = -4$$

$$\therefore\ \boxed{x = -2}$$

Recordar

RT ∡	0°	90°	180°	270°	360°
sen	0	1	0	**−1**	0
cos	1	0	−1	0	**1**
tan	0	ND	**0**	ND	0
cot	ND	0	ND	0	ND
sec	1	ND	−1	ND	1
csc	ND	**1**	ND	−1	ND

10 A continuación se muestra la distribución de la memoria de un dispositivo USB con capacidad de 16GB.

A: archivos

B: música

C: espacio disponible

Donde:

$A = (4\operatorname{sen}90° - 2\operatorname{sen}270°)$ GB

$B = (5\cos 360° + 2\sec 180°)$ GB

Determine el espacio disponible del USB.

RESOLUCIÓN

Usando las RT de ángulos cuadrantales:

• A = (4 (1) – 2 (– 1))GB

A = (4 + 2)GB ➡ **A = 6 GB**

• B = (5 (1) + 2(– 1))GB

B = (5 – 2)GB ➡ **B = 3 GB**

Piden: C: Espacio disponible

∴ **C = 7 GB**