



Materiales Educativos GRATIS

TRIGONOMETRIA CUARTO

REDUCCIÓN AL PRIMER CUADRANTE II

Para ángulos del segundo cuadrante

Si $x \in \text{IIC}$, se cumple:

$$\text{F.T.}(x) = (\pm) \text{F.T.}(180^\circ - x)$$

(+): para seno y cosecante

(-): para las demás funciones

Ejemplos:

- $\text{Sen}100^\circ = + \text{Sen}(180^\circ - 100^\circ) = \text{Sen}80^\circ = \text{Cos}10^\circ$
- $\text{Cos}130^\circ = -\text{Cos}(180^\circ - 130^\circ) = -\text{Cos}50^\circ = -\text{Sen}40^\circ$
- $\text{Tan}142^\circ = -\text{Tan}(180^\circ - 142^\circ) = -\text{Tan}38^\circ = -\text{Cot}52^\circ$
- $\text{Cot}168^\circ = -\text{Cot}(180^\circ - 168^\circ) = -\text{Cot}12^\circ = -\text{Tan}78^\circ$
- $\text{Sec}\frac{6\pi}{7} = -\text{Sec}(\pi - \frac{6\pi}{7}) = -\text{Sec}\frac{\pi}{7}$
- $\text{Csc}\frac{8\pi}{9} = +\text{Csc}(\pi - \frac{8\pi}{9}) = \text{Csc}\frac{\pi}{9}$

Para ángulos del tercer cuadrante

Si $x \in \text{IIIC}$, se cumple:

$$\text{F.T.}(x) = (\pm) \text{F.T.}(x - 180^\circ)$$

(+): para tangente y cotangente

(-): para las demás funciones

Ejemplos:

- $\text{Sen}190^\circ = -\text{Sen}(190^\circ - 180^\circ) = -\text{Sen}10^\circ = -\text{Cos}80^\circ$
- $\text{Cos}220^\circ = -\text{Cos}(220^\circ - 180^\circ) = -\text{Cos}40^\circ = -\text{Sen}50^\circ$
- $\text{Tan}236^\circ = +\text{Tan}(236^\circ - 180^\circ) = \text{Tan}56^\circ = \text{Cot}34^\circ$
- $\text{Cot}\frac{13\pi}{9} = \text{Cot}(\frac{13\pi}{9} - \pi) = \text{Cot}\frac{4\pi}{9}$

Para ángulos del cuarto cuadrante

Si $x \in \text{IVC}$, se cumple:

$$\text{F.T.}(x) = (\pm) \text{F.T.}(360^\circ - x)$$

(+): para coseno y secante

(-): para las demás funciones

Ejemplos:

- $\text{Cos}280^\circ = + \text{Cos}(360^\circ - 280^\circ) = \text{Cos}80^\circ$
- $\text{Tan}290^\circ = -\text{Tan}(360^\circ - 290^\circ) = -\text{Tan}70^\circ$
- $\text{Cot}344^\circ = -\text{Cot}(360^\circ - 344^\circ) = -\text{Cot}16^\circ$
- $\text{Sec}\frac{13\pi}{7} = +\text{Sec}(2\pi - \frac{13\pi}{7}) = \text{Sec}\frac{\pi}{7}$

Para ángulos de la forma:

$$\begin{bmatrix} 180^\circ \\ 0^\circ \pm x \\ 360^\circ \end{bmatrix} \quad \begin{bmatrix} 90^\circ \\ 0^\circ \pm x \\ 270^\circ \end{bmatrix}$$

Se cumple:

$$\text{F.T.} \begin{bmatrix} 180^\circ \\ 0^\circ \pm x \\ 360^\circ \end{bmatrix} = \pm \text{F.T.}(x)$$

$$\text{F.T.} \begin{bmatrix} 90^\circ \\ 0^\circ \pm x \\ 270^\circ \end{bmatrix} = \pm \text{CO-F.T.}(x)$$

Trabajando en clase

Integral

1. Simplifica:

$$E = \frac{\text{Sen}(90^\circ + x)}{\text{Cos}x}$$

2. Reduce:

$$P = \text{Cot}(180^\circ + x) + \text{Tan}(270^\circ + x)$$

3. Calcula:

$$N = \text{Sen}150^\circ + \text{Sen}30^\circ$$

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4. Simplifica:

$$E = \frac{\text{Sen}(180^\circ + x)}{\text{Sen}(360^\circ - x)} + \frac{\text{Sec}(90^\circ - x)}{\text{Csc}(180^\circ + x)}$$

Resolución:

$$E = \frac{\overset{\text{IIC}}{\downarrow} -\text{Sen}x}{\overset{\text{IVC}}{\uparrow} -\text{Sen}x} + \frac{\overset{\text{IC}}{\downarrow} +\text{Csc}x}{\overset{\text{IIIC}}{\uparrow} -\text{Csc}x}$$

$$E = 1 - 1$$

$$E = 0$$

5. Simplifica:

$$E = \frac{\text{Tan}(180^\circ - x)}{\text{Tan}(360^\circ + x)} + \frac{\text{Sen}(270^\circ + x)}{\text{Sen}(90^\circ + x)}$$

6. Calcula:

$$P = \text{Tan}135^\circ + \text{Cos}300^\circ$$

7. Calcula:

$$E = \frac{\text{Sec}(270^\circ + x)}{\text{Csc}(180^\circ - x)} + \frac{\text{Cos}120^\circ}{\text{Cot}315^\circ}$$

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8. Calcula:

$$E = \text{Sen}(-3645^\circ)$$

Resolución:

$$\text{i) } \text{Sen}(-\theta) = -\text{Sen}\theta$$

$$\text{ii) } 3645^\circ \left| \begin{array}{l} 360^\circ \\ 3600^\circ \end{array} \right| 45^\circ \left| \begin{array}{l} 360^\circ \\ 10^\circ \end{array} \right|$$

$$\text{iii) } \text{Sen}(-3645^\circ) = -\text{Sen}3645^\circ$$

$$\text{Sen}(-3645^\circ) = -\text{Sen}45^\circ$$

$$\text{Sen}(-3645^\circ) = -\frac{\sqrt{2}}{2}$$

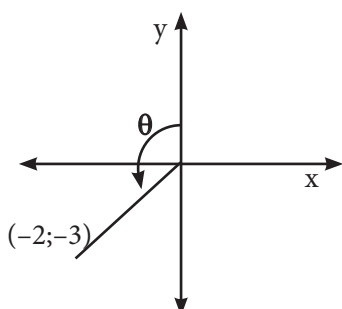
9. Calcula:

$$E = \text{Tan}(-2580^\circ)$$

10. Simplifica:

$$\text{Sen}(-120^\circ) + \text{Cos}(-330^\circ) - \frac{\text{Tan}(270^\circ - x)}{\text{Cot}(360^\circ - x)}$$

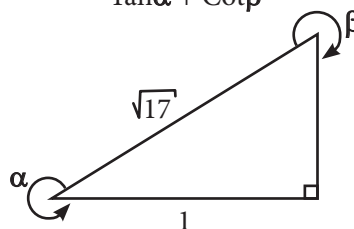
11. Calcula $\text{Cot}\theta$



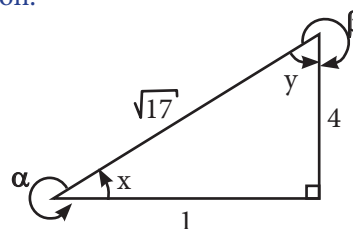
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12. Determina:

$$\text{Tan}\alpha + \text{Cot}\beta$$



Resolución:



Del gráfico:

$$x + \alpha = 360^\circ \Rightarrow \alpha = 360^\circ - x$$

$$\text{Tan}\alpha = \text{Tan}(360^\circ - x)$$

$$\text{Tan}\alpha = -\text{Tan}x$$

$$\text{Tan}\alpha = -4$$

$$y - \beta = 360^\circ \Rightarrow y = 360^\circ + \beta$$

$$\text{Coty} = \text{Cot}(360^\circ + \beta)$$

$$\text{Coty} = \text{Cot}\beta \Rightarrow \text{Cot}\beta = 4$$

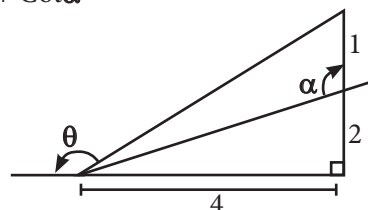
Nos piden:

$$E = \text{Tan}\alpha + \text{Cot}\beta$$

$$E = -4 + 4 = 0$$

13. Calcula:

$$\text{Cot}\theta + \text{Cot}\alpha$$



14. Si:

$$\text{Tan}(360^\circ - \alpha) + \text{Csc}(270^\circ + \alpha) = 4$$

Calcula:

$$M = \frac{\text{Cot}(270^\circ + \alpha) + \text{Sen}(180^\circ + \alpha)}{\text{Cos}(270^\circ - \alpha)}$$