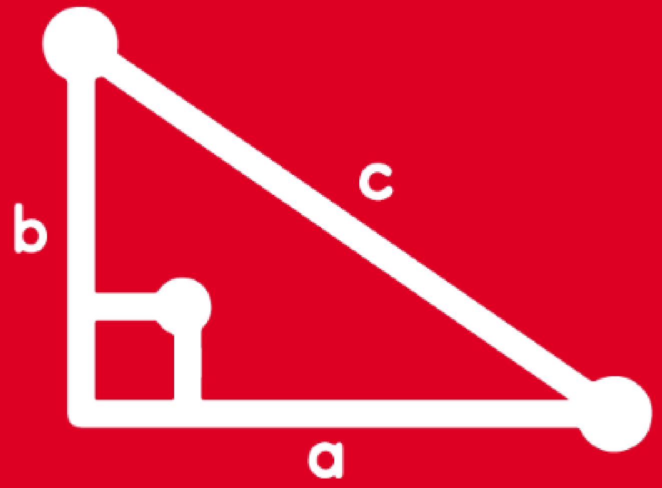
TRIGONOMETRY

TOMO VII



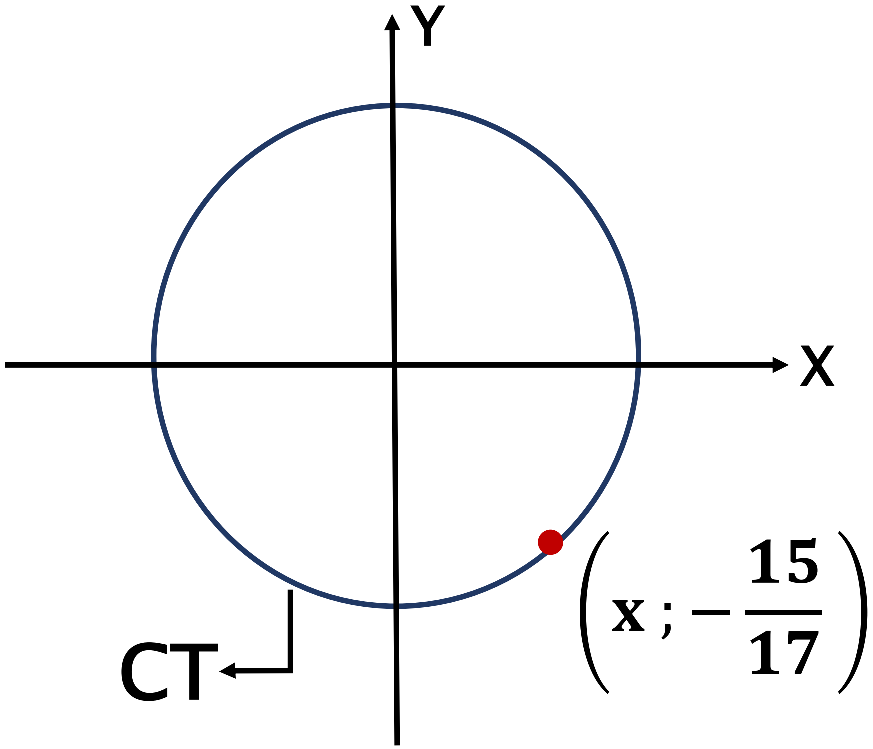
3rd
SECONDARY

Feedback

SACO OLIVEROS

HELICO-PRACTICA

1) En el gráfico, calcule el valor de x .



RESOLUCIÓN

Aplicamos : $x^2 + y^2 = 1$

$$x^2 + \left(-\frac{15}{17}\right)^2 = 1$$

$$x^2 + \frac{225}{289} = 1$$

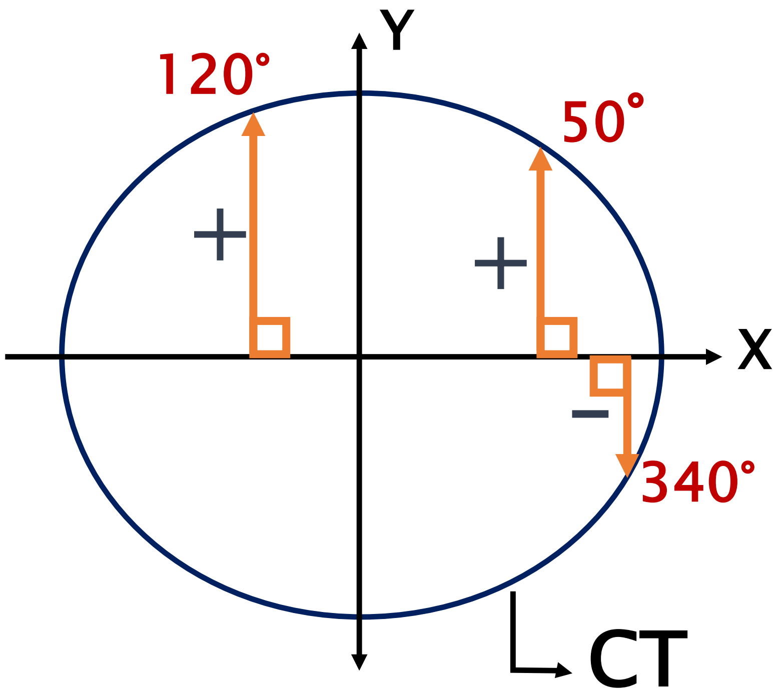
$$x^2 = \frac{64}{289}$$

$$\boxed{x = \frac{8}{17}}$$

HELICO-PRACTICE

2) Ubique en la CT : sen340°, sen120° y sen50° , luego indique el de mayor valor.

RESOLUCIÓN



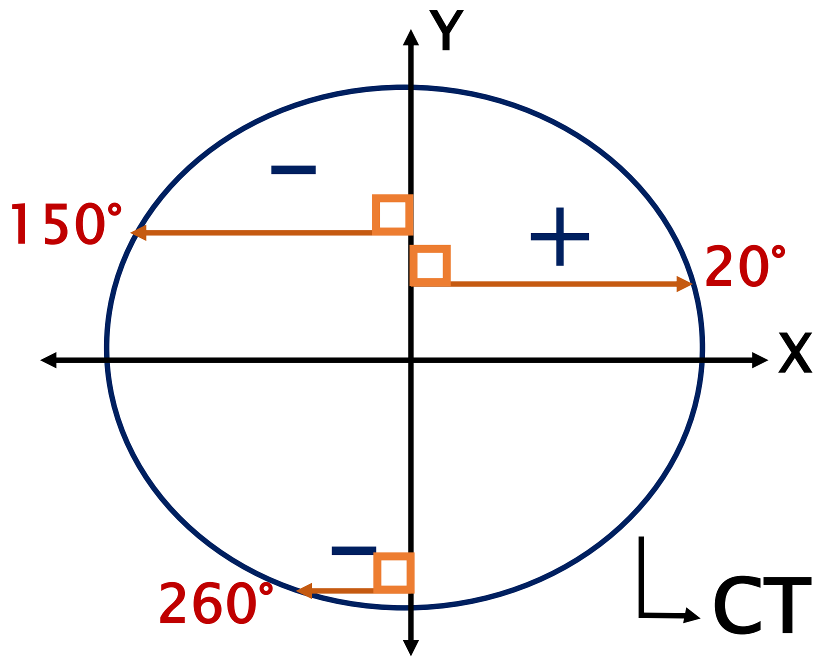
$$\text{sen}120° > \text{sen}50° > \text{sen}340°$$

$\therefore$ Mayor valor = sen120°

HELICO-PRACTICE

3) Ubique en la CT : cos20°, cos150° y cos260° e indique el menor valor.

Resolución:



$\cos 20° > \cos 260° > \cos 150°$

$\therefore$ Menor valor = cos150°

HELICO-PRACTICE

4) Reduzca $M = \cos\theta - \operatorname{sen}\theta \cdot \cot\theta$

Resolución:

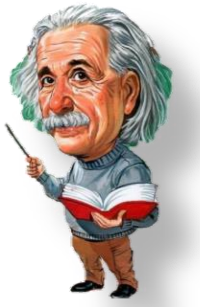
$$\cot\theta = \frac{\cos\theta}{\operatorname{sen}\theta}$$

Aplicamos identidad por división:

$$M = \cos\theta - \cancel{\operatorname{sen}\theta} \cdot \frac{\cos\theta}{\cancel{\operatorname{sen}\theta}}$$

$$M = \cos\theta - \cos\theta$$

$$\boxed{M = 0}$$



HELICO-PRACTICE 5

5) Simplifique P = $sec^3\theta \cdot cos^2\theta \cdot sen\theta \cdot cot\theta$

Resolución:

Agrupamos en forma conveniente, luego aplicamos identidades recíprocas y por división:

$$P = (sec\theta . cos\theta)^2 . sec\theta . \cancel{sen\theta} . \frac{cos\theta}{\cancel{sen\theta}}$$

$$P = (1)^2 . (sec\theta . cos\theta)$$

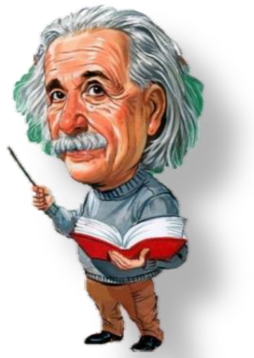
$$P = (1) . (1)$$

$$\boxed{P = 1}$$

Recordar:

$cos\theta . sec\theta = 1$

$cot\theta = \frac{cos\theta}{sen\theta}$



HELICO-PRACTICE 6

6) Simplifique $E = \text{senx}\,(1 + \text{cscx}) - \text{cosx}.\text{tanx}$

Resolución:

$$E = \text{senx} + \text{senx}.\text{cscx} - \cancel{\text{cosx}}.\frac{\text{senx}}{\cancel{\text{cosx}}}$$

$$E = \text{senx} + 1 - \text{senx}$$

$$\boxed{E = 1}$$

Recordar:

senx.cscx = 1

HELICO-PRACTICE 7

7) Demuestre que: $\sec^5 x.\ \cos^3 x - \tan^5 x.\ \cot^3 x = 1$

Resolución:

Agrupamos y luego aplicamos identidades recíprocas y pitagóricas:

$$E = (\sec x \,.\, \cos x)^3 \sec^2 x - (\tan x \,.\, \cot x)^3 \tan^2 x$$

$$E = (1)^3 \sec^2 x - (1)^3 \tan^2 x$$

$$E = \sec^2 x - \tan^2 x = 1$$

Lqqd : $\sec^5 x.\ \cos^3 x + \tan^5 x.\ \cot^3 x = 1$

HELICO-PRACTICE 8

8) Simplifique $P = \left(\dfrac{\csc^3\theta}{1+\cot^2\theta}\right)\operatorname{sen}\theta$

Resolución:

Aplicamos identidades pitagóricas y recíprocas:

$$P = \left(\frac{\cancel{\csc^3\theta}}{\cancel{\csc^2\theta}}\right)\operatorname{sen}\theta$$

$$P = \csc\theta \,.\, \operatorname{sen}\theta$$

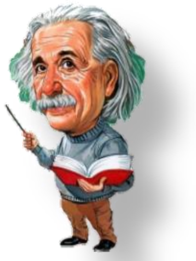
$$\boxed{P = 1}$$

Recordar

$$\csc^2\theta - \cot^2\theta = 1$$

$$\csc^2\theta = 1 + \cot^2\theta$$

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



HELICO-PRACTICE

9) Simplifique $E = (\text{sen}\theta + \cos\theta \,.\, \cot\theta)\text{sen}\theta$

Resolución:

$$E = \text{sen}\theta \,.\, \text{sen}\theta + \cos\theta \,.\, \cot\theta \,.\, \text{sen}\theta$$

Recordar:

$$\cot\theta = \frac{\cos\theta}{\text{sen}\theta}$$

$$E = \text{sen}^2\theta + \cos\theta \,.\, \frac{\cos\theta}{\cancel{\text{sen}\theta}} \,.\, \cancel{\text{sen}\theta}$$

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

$$\boxed{E = 1}$$

HELICO-PRACTICE

10) Al copiar de la pizarra la expresión $\sec x - \tan x - 1$, un estudiante cometió un error y escribió $\csc x - \cot x - 1$. Calcule la razón entre lo que estaba escrito en la pizarra y lo que copió el alumno.

Resolución:

$$E = \frac{\sec x - \tan x - 1}{\csc x - \cot x - 1}$$

$$E = \frac{\dfrac{1}{\cos x} - \dfrac{\operatorname{sen} x}{\cos x} - \dfrac{\cos x}{\cos x}}{\dfrac{1}{\operatorname{sen} x} - \dfrac{\cos x}{\operatorname{sen} x} - \dfrac{\operatorname{sen} x}{\operatorname{sen} x}}$$

$$E = \frac{\left[\dfrac{\cancel{1 - \operatorname{sen} x - \cos x}}{\cos x}\right]}{\left[\dfrac{\cancel{1 - \cos x - \operatorname{sen} x}}{\operatorname{sen} x}\right]}$$

$$E = \frac{\operatorname{sen} x}{\cos x}$$

$$\boxed{\therefore\ E = \tan x}$$