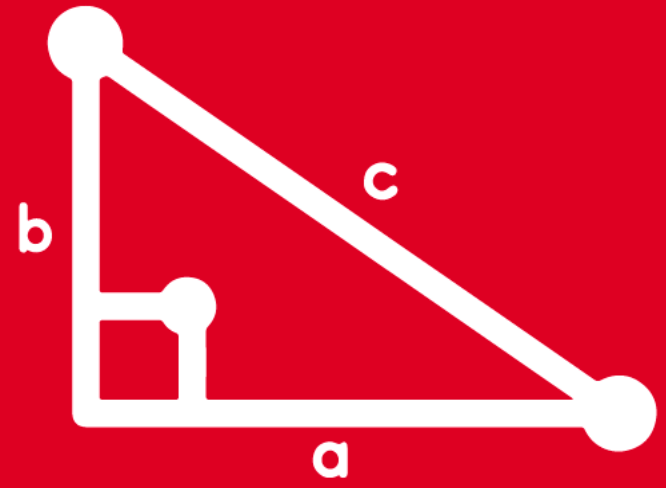
TRIGONOMETRY

Tomo 7 y 8



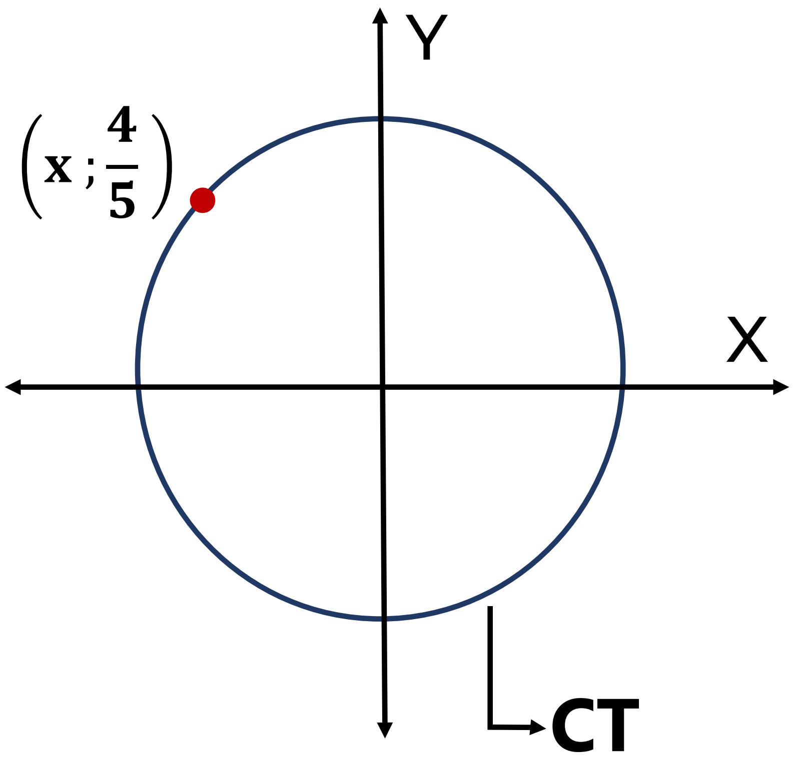
3rd
SECONDARY

ADVISORY

SACO OLIVEROS

HELICO-PRACTICA

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



RESOLUCIÓN

Se cumple: $\boxed{x^2 + y^2 = 1}$

$$x^2 + \left(\frac{4}{5}\right)^2 = 1$$

$$x^2 + \frac{16}{25} = 1$$

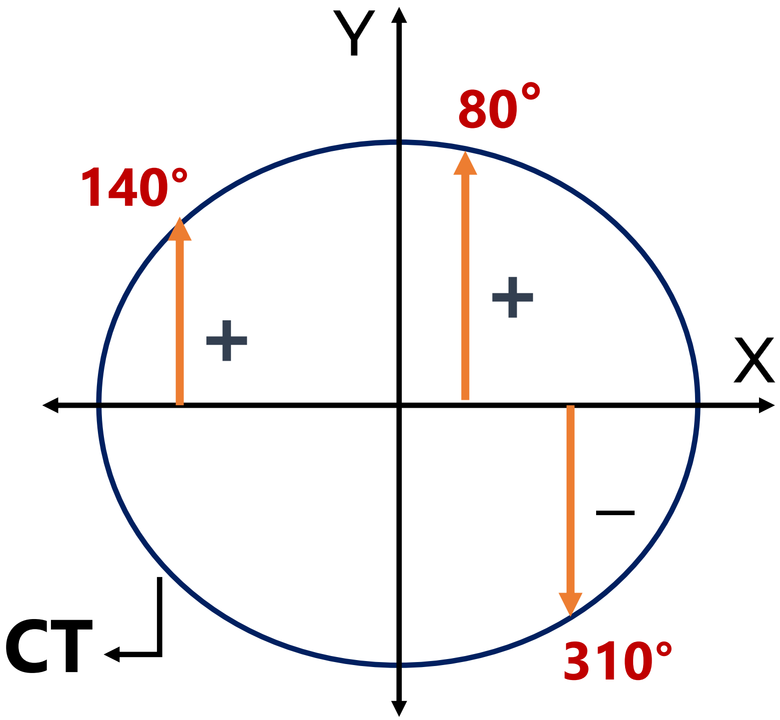
$$x^2 = \frac{9}{25}$$

$$\therefore\ x = -\frac{3}{5}$$

HELICO-PRACTICE

2) Ubique en la CT : sen310°, sen140° y sen80° , luego indique el de mayor valor.

RESOLUCIÓN



De la CT, tenemos:

sen80° > sen140° > sen310°

∴ Mayor valor es sen80°

HELICO-PRACTICE

3) Simplifique $E = \tan x\,(\cos x + \cot x) - \text{sen}^2 x.\csc x$

Resolución:

$$E = \tan x.\cos x + \underbrace{\tan x.\cot x} - \text{sen}x.\underbrace{\text{sen}x.\csc x}$$

$$E = \left(\frac{\text{sen}x}{\cancel{\cos x}}\right)\cancel{\cos x} + 1 - \text{sen}x.1$$

$$E = \cancel{\text{sen}x} + 1 - \cancel{\text{sen}x}$$

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

Recordar:

$\boxed{\tan x.\cot x = 1}$

$\boxed{\text{sen}x.\csc x = 1}$

HELICO-PRACTICE

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

Resolución:

$$E = \cos\theta .\ \sec\theta + \cancel{\text{sen}}\theta\left(\frac{\cos\theta}{\cancel{\text{sen}}\theta}\right)\sec\theta$$

$$E = \underbrace{\cos\theta.\sec\theta}_{} + \underbrace{\cos\theta.\sec\theta}_{}$$

$$E = 1 + 1$$

$$\therefore\ \mathbf{E} = 2$$

Recordar:

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

HELICO-PRACTICE

5) Simplifique $R = \dfrac{1 + \cot x}{\csc x} - \cos x$

Resolución:

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

$$R = \frac{\dfrac{\operatorname{sen} x + \cos x}{\cancel{\operatorname{sen} x}}}{\dfrac{1}{\cancel{\operatorname{sen} x}}} - \cos x$$

$$R = \operatorname{sen} x + \cancel{\cos x} - \cancel{\cos x}$$

$$\therefore\ R = \operatorname{sen} x$$

Recordar:

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

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

HELICO-PRACTICE

6) Reducir la expresión: $E = 5\cos(53° + x) + 4\text{sen}x$

Resolución:

$$E = 5(\cos 53°.\cos x - \text{sen}53°.\text{sen}x) + 4\text{sen}x$$

$$E = 5\left(\frac{3}{5}\cos x - \frac{4}{5}\text{sen}x\right) + 4\text{sen}x$$

$$E = 3\cos x \cancel{- 4\text{sen}x} \cancel{+ 4\text{sen}x}$$

$$\therefore E = 3\cos x$$

HELICO-PRACTICE

7) Si $\tan x = \frac{1}{3}$ y $\tan y = 2$; calcule $\tan(x - y)$

Resolución:

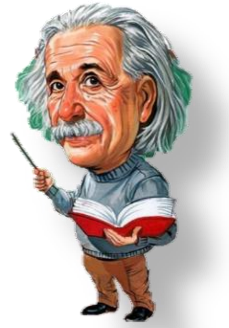
$$\tan(x - y) = \frac{\frac{1}{3} - 2}{1 + \left(\frac{1}{3}\right)(2)}$$

$$\Rightarrow \tan(x - y) = \frac{-\frac{5}{6}}{\frac{5}{6}}$$

$$\therefore \tan(x - y) = -1$$

Recordar

$$\tan(x - y) = \frac{\tan x - \tan y}{1 + \tan x . \tan y}$$



HELICO-PRACTICE

8) Si θ es un ángulo agudo, tal que $\text{sen}\theta = \frac{2}{3}$, calcule $\cos 2\theta$.

Resolución:

$$\cos 2\theta = 1 - 2\left(\frac{2}{3}\right)^2$$

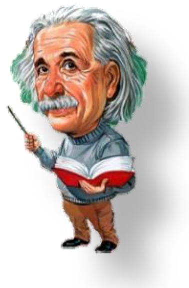
$$\cos 2\theta = 1 - 2\left(\frac{4}{9}\right)$$

$$\cos 2\theta = 1 - \frac{8}{9}$$

$$\therefore\ \cos 2\theta = \frac{1}{9}$$

Recordar:

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



HELICO-PRACTICE

9) Siendo β un ángulo agudo, tal que $\tan\beta = \frac{1}{3}$, calcule $\cos 2\beta$

Resolución:

$$\cos 2\beta = \frac{1 - \left(\frac{1}{3}\right)^2}{1 + \left(\frac{1}{3}\right)^2}$$

Recordar:

$$\boxed{\cos 2\beta = \frac{1 - \tan^2\beta}{1 + \tan^2\beta}}$$

$$\cos 2\beta = \frac{1 - \frac{1}{9}}{1 + \frac{1}{9}} = \frac{\frac{8}{9}}{\frac{10}{9}}$$

$$\cos 2\beta = \frac{\cancel{8}}{\cancel{10}}$$

$$\therefore \cos 2\beta = \frac{4}{5}$$

HELICO-PRACTICE

10) Si $\cot\alpha + \tan\alpha = \sqrt{7}$; calcule $L = \sqrt{7}\operatorname{sen}2\alpha + 4$

Resolución:

$$\underbrace{\cot\alpha + \tan\alpha}_{} = \sqrt{7}$$

$$2\csc 2\alpha = \sqrt{7}$$

$$\csc 2\alpha = \frac{\sqrt{7}}{2}$$

Piden: $L = \sqrt{7}\operatorname{sen}2\alpha + 4$

$$L = \cancel{\sqrt{7}}\left(\frac{2}{\cancel{\sqrt{7}}}\right) + 4$$

$$L = 2 + 4$$

$$\therefore\ L = 6$$

COLEGIOS
SACO OLIVEROS APEIRON
SISTEMA HELICOIDAL

MUCHAS GRACIAS POR TU ATENCIÓN

Tu curso amigo

TRIGONOMETRÍA