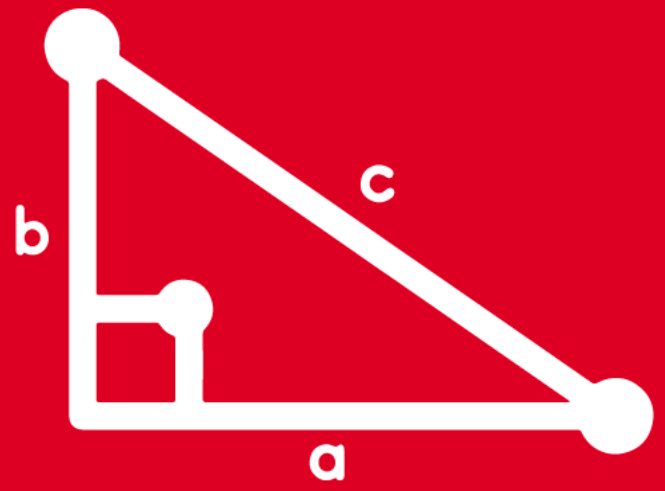
TRIGONOMETRY

1st
SECONDARY



Review chapter 10, 11 and 12

SACO OLIVEROS

HELICOPRACTICE 1

Determine el ángulo y/o la razón trigonométrica que falta.

Recordar:

$\text{sen}\alpha \cdot \csc\alpha = 1$
$\cos\alpha \cdot \sec\alpha = 1$
$\tan\alpha \cdot \cot\alpha = 1$

Resolución:

I. $\text{sen}30° \cdot \csc \boxed{30°} = 1$

II. $\cos \boxed{50°} \cdot \sec 50° = 1$

III. $\boxed{\tan 67°} \cdot \cot 67° = 1$

HELICOPRACTICE 2

Calcule las razones trigonométricas recíprocas, según corresponda.

Recordar:

$\text{sen}\alpha = \frac{a}{b} \Rightarrow \csc\alpha = \frac{b}{a}$

$\cos\beta = \frac{m}{n} \Rightarrow \sec\beta = \frac{n}{m}$

$\tan\theta = \frac{x}{y} \Rightarrow \cot\theta = \frac{y}{x}$

Resolución:

I. $\cos\beta = \frac{3}{5} \Rightarrow \sec\beta = \boxed{\frac{5}{3}}$

II. $\tan\theta = \frac{9}{5} \Rightarrow \cot\theta = \boxed{\frac{5}{9}}$

III. $\csc\alpha = 3 \Rightarrow \text{sen}\alpha = \boxed{\frac{1}{3}}$

HELICOPRACTICE 3

Alessandro y Raúl tienen a y b años, respectivamente. Averigüe quién de los dos es el mayor si se cumplen las siguientes condiciones

$\operatorname{sen}(3a + 10)^\circ \cdot \csc(4a - 7)^\circ = 1$ y

$\tan(5b - 6)^\circ \cdot \cot(4b + 11)^\circ = 1$

Recordar:

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

$\tan\alpha . \cot\alpha = 1$

Resolución:

$\operatorname{sen}(3a + 10)^\circ \cdot \csc(4a - 7)^\circ = 1$

$3a + 10 = 4a - 7$

$10 + 7 = 4a - 3a$

$17 = a$

Edad de Alessandro = 17

$\tan(5b - 5)^\circ \cdot \cot(4b + 11)^\circ = 1$

$5b - 5 = 4b + 11$

$5b - 4b = 11 + 5$

$b = 16$

Edad de Raúl = 16

∴ El mayor es Alessandro

HELICOPRACTICE 4

Calcule $M = \frac{a+b}{c}$; si

sen 2a = cos 70°

tan b = cot 40°

sec 42° = csc 4c

Recordar

$Si\ \theta + \beta = 90°$

$sen\theta = cos\beta$

$tan\theta = cot\beta$

$sec\theta = csc\beta$

Resolución:

sen2a = cos70°

2a+70° = 90°

2a = 20°

a = 10°

tanb = cot40°

b+40° = 90°

b = 50°

sec42° = csc4c

42°+4c = 90°

4c = 48°

c = 12°

Piden:

$M = \frac{a+b}{c} = \frac{10° + 50°}{12°}$

$M = \frac{60^{\not{\circ}}}{12^{\not{\circ}}}$

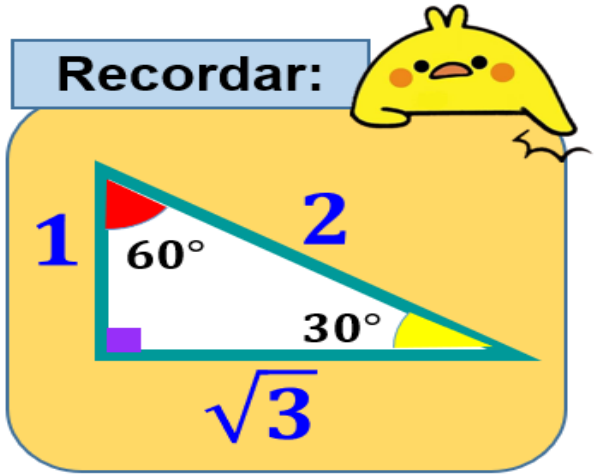
∴ M = 5

HELICOPRACTICE 5

Calcule el valor de sec 2n, si
tan(25° – 7m) = cot (2n + 7m + 35°)

Recuerda que:
Si $\theta + \beta = 90°$

$\tan\theta = \cot\beta$



Resolución:

$25° - \cancel{7m} + 2n + \cancel{7m} + 35° = 90°$

$60° + 2n = 90°$

$2n = 30° \Rightarrow n = 15°$

Piden: $\sec 2n = \sec 2(15°) = \sec 30°$

$\therefore \sec 2n = \frac{2}{\sqrt{3}} = \frac{2\sqrt{3}}{3}$

HELICOPRACTICE 6

Si $\alpha + \beta = 90°$, además $\tan\alpha = \frac{5}{7}$; efectúe :

$P = 21\cot\beta - 1$

Recuerda que:

si $\theta + \Phi = 90°$

$\tan\theta = \cot\Phi$

Resolución:

Como $\alpha + \beta = 90°$ pero: $\tan\alpha = \frac{5}{7}$

$\Rightarrow \tan\alpha = \cot\beta$ Luego: $\cot\beta = \frac{5}{7}$

Piden: $P = 21\cot\beta - 1$

$$P = \cancel{21}^{3}\left(\frac{5}{\cancel{7}}\right)^{1} - 1$$

$$P = 15 - 1$$

$\therefore P = 14$

HELICOPRACTICE 7

Calcule el valor de $P = \cot(4x + 5)°$ si
$\operatorname{sen}(4x + 10°).\csc(3x + 20°) = 1$

Resolución:

$$\operatorname{sen}(4x + 10°).\csc(3x + 20°) = 1$$

$$4x + 10° = 3x + 20°$$

$$4x - 3x = 20° + 10°$$

$$x = 10°$$

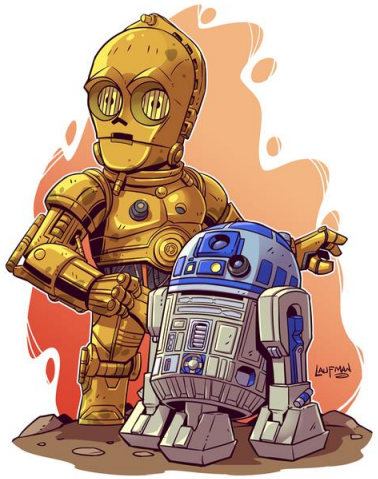
Piden:

$$P = \cot(4x + 5)$$

$$P = \cot(4(10°) + 5)$$

$$P = \cot(45°)$$

$$\therefore P = 1$$



Remember:

$\operatorname{sen}\alpha \cdot \csc\alpha = 1$

Remember:

$\cos\theta \cdot \sec\theta = 1$

Remember:

$\tan\beta \cdot \cot\beta = 1$

HELICOPRACTICE 8

Calcule el valor de K = $sen(3\beta + 7°)$, *si* :

$$\tan(\beta + 20°) = \cot(3\beta + 30°)$$

Resolución:

$$\tan(\beta + 20°) = \cot(3\beta + 30°)$$

$$\beta + 20° + 3\beta + 30° = 90°$$

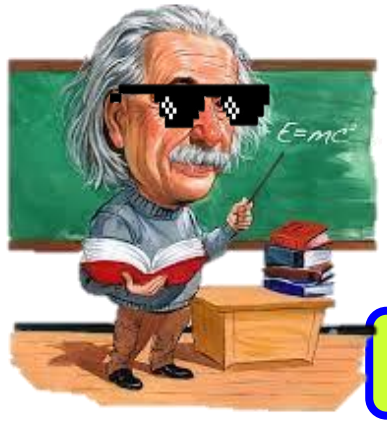
$$4\beta = 90° - 50°$$

$$4\beta = 40° \longrightarrow \beta = 10°$$

Reemplazamos:

$$sen(3\beta + 7°) = \text{sen}(30° + 7°)$$

$$\therefore \text{sen}(37°) = \frac{3}{5}$$



Remember:

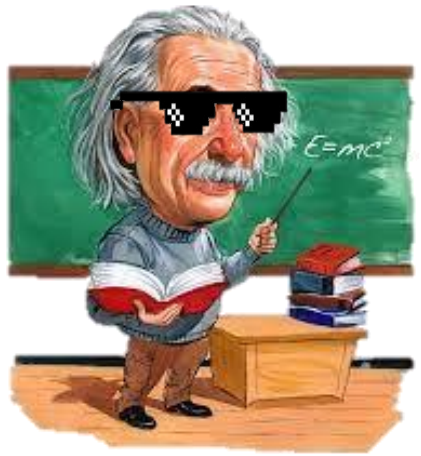
$SI: \alpha + \beta = 90°$

$sen\,\alpha = cos\,\beta$ | $tan\,\alpha = cot\beta$ | $sec\,\alpha = csc\beta$

HELICOPRACTICE 9

Calcule el valor de φ si
$$sen7\varphi . sec20° = 1$$

Recordamos:



Complementarias

$$SI: \alpha + \beta = 90°$$

$$\sec\alpha = \csc\beta$$

R.T Reciprocas

$$sen\,\beta \cdot \csc\beta = 1$$

Resolución:

$$sen7\varphi . \underbrace{sec20°} = 1$$

$$sen7\varphi . csc70° = 1$$

$$7\varphi = 70°$$

$$\therefore \varphi = 10°$$

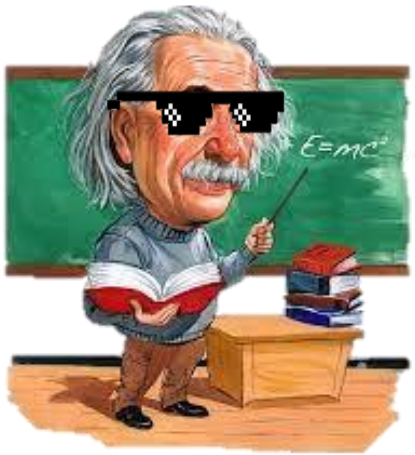
HELICOPRACTICE 10

Calcule el valor de $tan(x+y)$, *si*:

$\tan(2x+15°).\cot(4x-25°)=1 \quad (a)$

$\sec(2y+16°)=\csc(y+23°) \quad (b)$

Recordamos:



Complementarias

$SI: \alpha+\beta=90°$

$sec(\alpha)=csc(\beta)$

R.T Reciprocas

$tan\varphi.cot\varphi=1$

Resolución:

En (a): $\tan(2x+15°).\cot(4x-25°)=1$

$$2x+15°=4x-25°$$

$$40°=2x$$

$$x=20°$$

En (b): $\sec(2y+16°)=\csc(y+23°)$

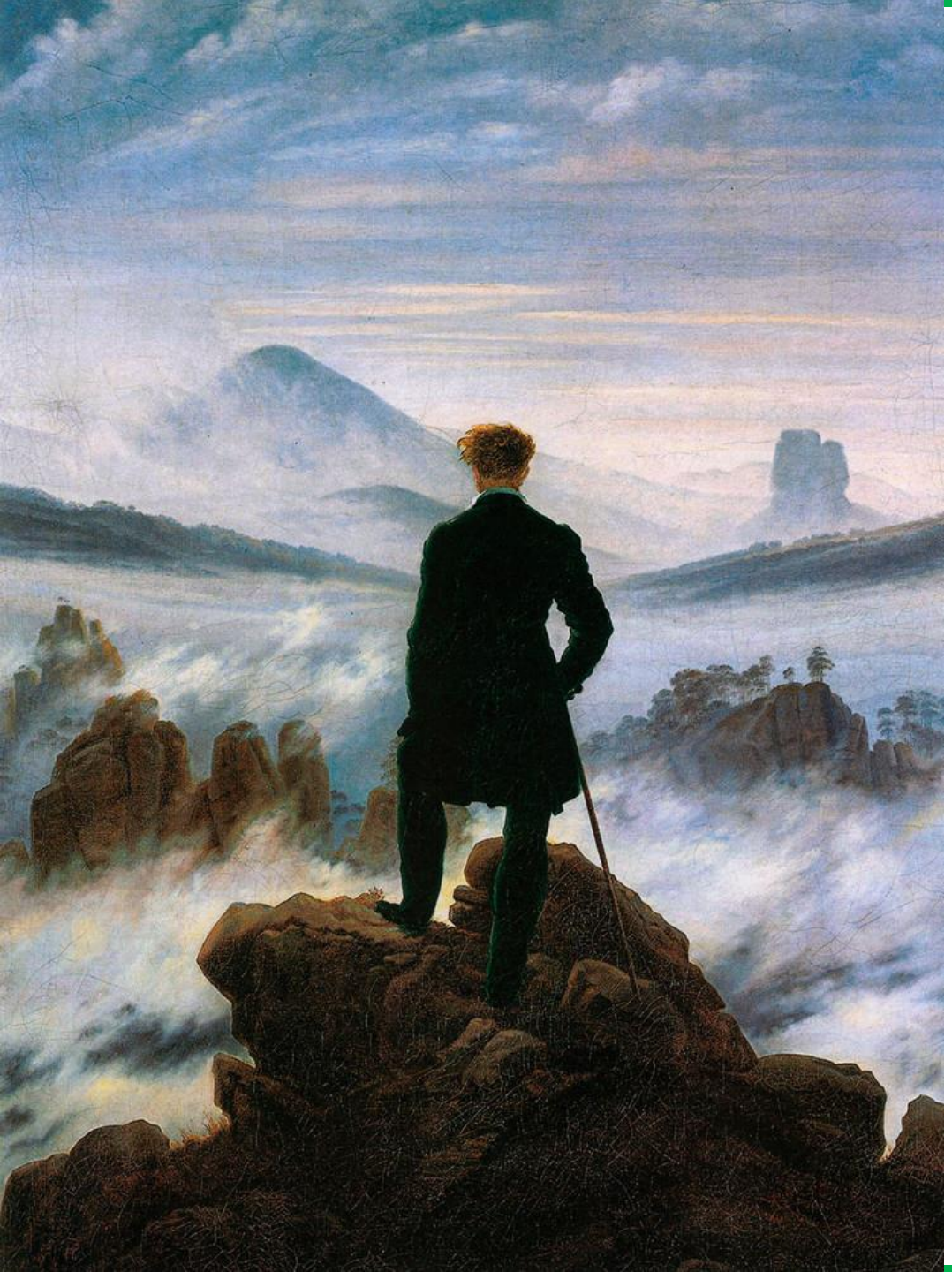
$$2y+16+y+23°=90°$$

$$3y=90-39°$$

$$3y=51°$$

$$y=17°$$

$$\therefore \tan(37°)=\frac{3}{4}$$



MUCHAS GRACIAS POR TU ATENCIÓN

¡Que la fuerza este contigo!

EL CAMINANTE SOBRE EL MAR DE NUBES
David Caspar Friedrich