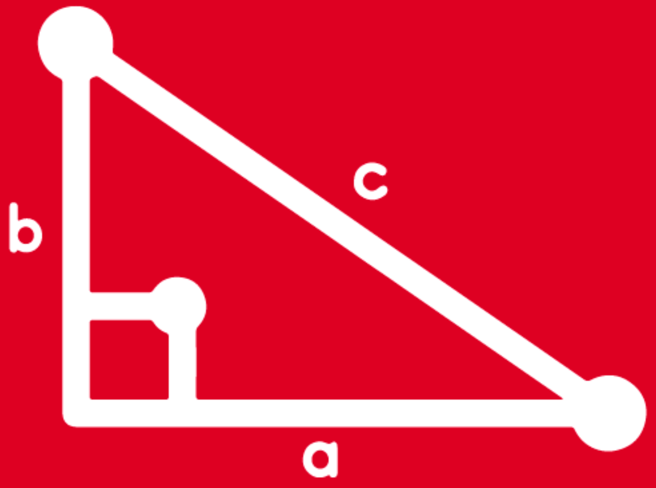
TRIGONOMETRY

TOMO 4

1st
SECONDARY



REVIEW

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. $\cos\boxed{50°} \cdot \sec50° = 1$

III. $\boxed{\tan67°} \cdot \cot67° = 1$

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

$\text{sen}(3a + 10)° \cdot \csc(4a – 7)° = 1$ y

$\tan(5b – 6)° \cdot \cot(4b + 11)° = 1$

Recordar:

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

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

Resolución:

$\text{sen}(3a + 10)° \cdot \csc(4a – 7)° = 1$

$3a + 10 = 4a - 7$

$10 + 7 = 4a - 3a$

$\boxed{17 = a}$

Edad de Alessandro = 17

$\tan(5b – 5)° \cdot \cot(4b + 11)° = 1$

$5b – 5 = 4b + 11$

$5b – 4b = 11 + 5$

$\boxed{b = 16}$

Edad de Raúl = 16

$\therefore$ El mayor es Alessandro

HELICOPRACTICE 4

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

$\text{sen } 2a = \cos 70°$

$\tan b = \cot 40°$

$\sec 42° = \csc 4c$

Recordar

$Si\ \theta + \beta = 90°$

$\text{sen}\theta = \cos\beta$

$\tan\theta = \cot\beta$

$\sec\theta = \csc\beta$

Resolución:

$\underbrace{\text{sen}2a = \cos 70°}$

$2a + 70° = 90°$

$2a = 20°$

$a = 10°$

$\underbrace{\sec 42° = \csc 4c}$

$42° + 4c = 90°$

$4c = 48°$

$c = 12°$

$\underbrace{\tan b = \cot 40°}$

$b + 40° = 90°$

$b = 50°$

Calculamos:

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

$$M = \frac{6\cancel{0}}{12\cancel{0}}$$

$\therefore$ M = 5

HELICOPRACTICE 5

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

Resolución:

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

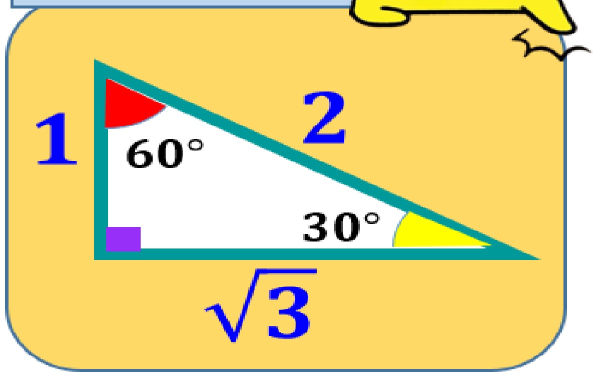
$60° + 2n = 90°$

$2n = 30°$ $\Rightarrow$ $n = 15°$

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

$\boxed{\tan\theta = \cot\beta}$

Recordar:



Calculamos: sec2n = sec2(15°) = sec30°

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

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:** $\cot\beta = \frac{5}{7}$

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

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

$P = 15 - 1$

$\therefore P = 14$

HELICOPRACTICE 7

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

Resolución:

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

$$4x+10°=3x+20°$$

$$4x-3x=20°+10°$$

$$x=10°$$

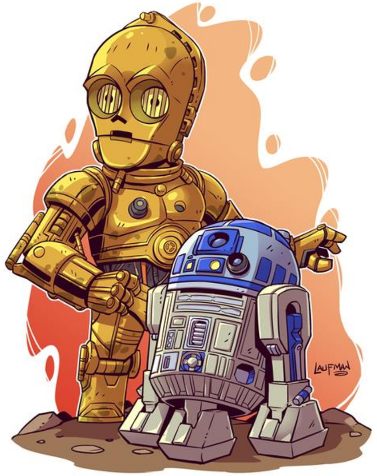
Calculamos:

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

$$P=\cot(4(10°)+5)$$

$$P=\cot(45°)$$

$$\boxed{\therefore P=1}$$



Remember:

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

Remember:

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

Remember:

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

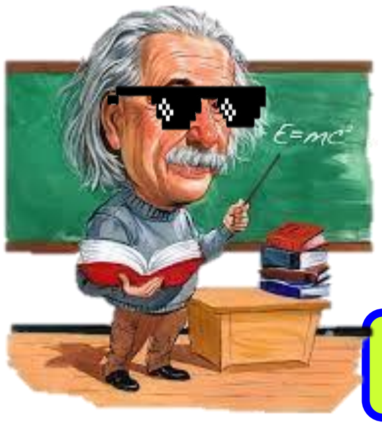
HELICOPRACTICE 8

Calcule el valor de K = $sen(3\beta + 7°)$,
$si:$ $\tan(\beta + 20°) = \cot(3\beta + 30°)$

Resolución:

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

$$\beta + 20° + 3\beta + 30° = 90°$$



Remember:

$SI: \alpha + \beta = 90°$

$$4\beta = 90° - 50°$$

$$\cancel{4}\beta = 4\cancel{0}° \rightarrow \beta = 10°$$

Reemplazamos:

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

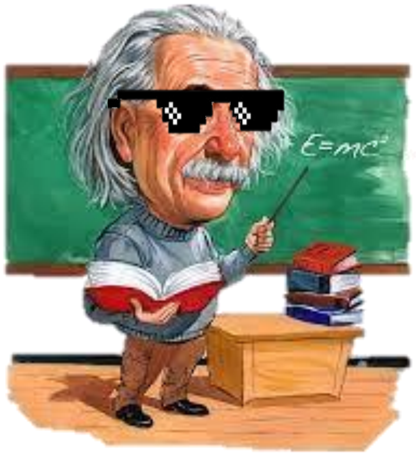
$$\therefore \mathrm{sen}(37°) = \frac{3}{5}$$

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

HELICOPRACTICE 9

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

Recordamos:



Complementarias

$SI: \alpha + \beta = 90°$

$\boxed{sec\,\alpha = csc\beta}$

R.T Reciprocas

$\boxed{sen\,\beta \cdot csc\,\beta = 1}$

Resolución:

$sen7\varphi.\underbrace{sec20°} = 1$

$sen7\varphi.csc70° = 1$

$\cancel{7}\varphi = \cancel{7}0°$

$\boxed{\therefore\ \varphi = 10°}$

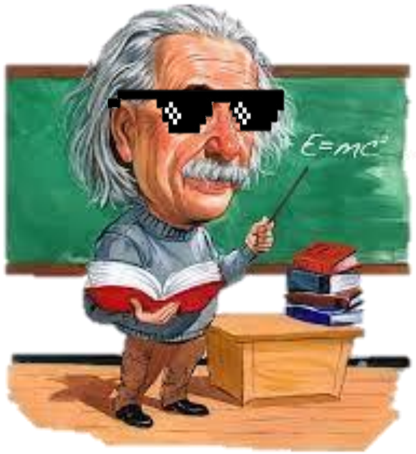
HELICOPRACTICE 10

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

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

$\sec(2y+16°)=\csc(y+23°) \quad \dots(b)$

Recordamos:



Complementarias

$SI: \alpha+\beta=90°$

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

R.T Reciprocas

$tan\varphi.cot\varphi=1$

Resolución:

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

$$2x+15°=4x-25°$$

$$40°=2x$$

$$x=20°$$

$En\ (b):\quad \sec(2y+16°)=\csc(y+23°)$

$$2y+16+y+23°=90°$$

$$3y=90-39°$$

$$3y=51°$$

$$y=17°$$

$$\therefore \tan(37°)=\frac{3}{4}$$