

# TRIGONOMETRY

## VOLUME II

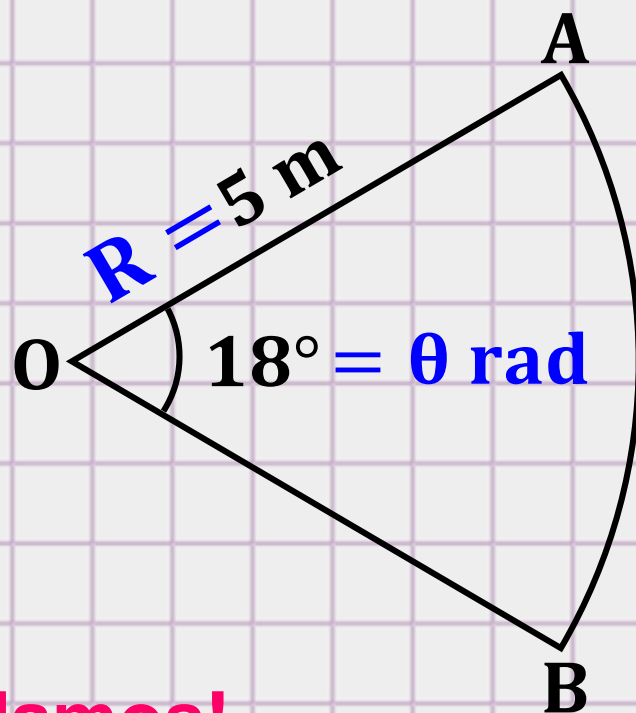
**3rd**  
SECONDARY

**FEEDBACK**



1

Calcule el área del sector circular AOB.



¡Recordamos!



Área del sector circular (S):

$$S = \frac{1}{2} \theta R^2$$

## RESOLUCIÓN

Convertimos el ángulo central al sistema angular radial:

$$\theta \text{ rad} = \cancel{18^\circ}^1 \times \frac{\pi \text{ rad}}{\cancel{180^\circ}_{10}} = \frac{\pi}{10} \text{ rad}$$

$$\Rightarrow \boxed{\theta = \frac{\pi}{10}}$$

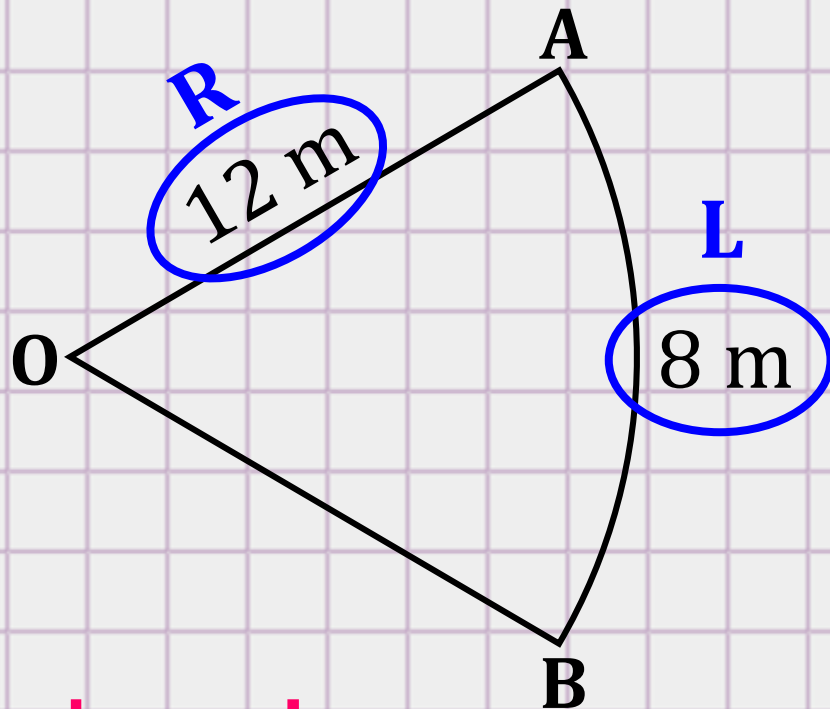
Calculamos el área del sector:

$$S = \frac{1}{2} \left( \frac{\pi}{10} \right) (5)^2 = \frac{\pi}{\cancel{20}_4} \cdot \cancel{25}^5$$

$$\therefore \boxed{S = \frac{5\pi}{4} \text{ m}^2}$$

2

Del gráfico, calcule el área del sector AOB.



¡Recordamos!



Área del sector circular (S):  $S = \frac{L \cdot R}{2}$

## RESOLUCIÓN

Reemplazamos en la fórmula:

$$S = \frac{(12 \text{ m})(8 \text{ m})}{2}$$

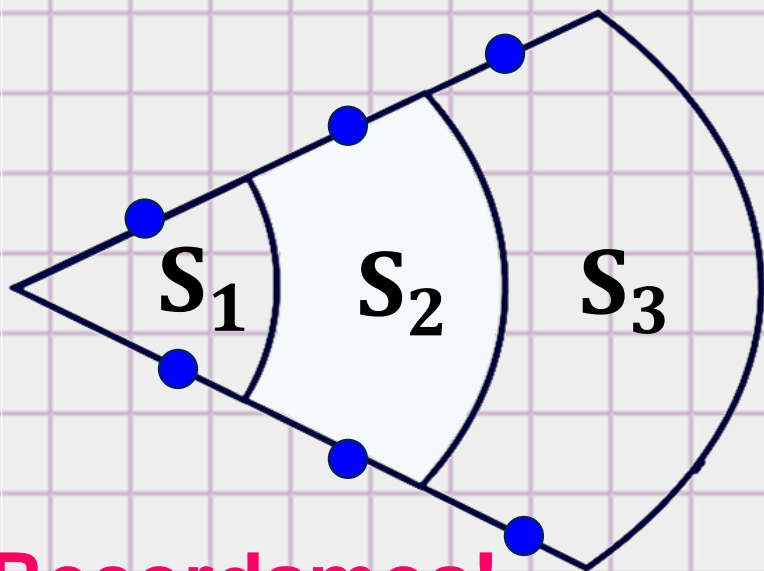
$$S = \frac{96 \text{ m}^2}{2}$$

$$\therefore S = 48 \text{ m}^2$$

3

A partir del gráfico, reduzca

$$E = \frac{2S_2 + 4S_1}{S_3 - 3S_1}$$



¡Recordamos!

Del gráfico, por propiedad:

$$S_1 = S$$

$$S_2 = 3S$$

$$S_3 = 5S$$

RESOLUCIÓN

Reemplazamos en la expresión:

$$E = \frac{2(3S) + 4(S)}{(5S) - 3(S)}$$

$$E = \frac{10S}{2S}$$

$$\therefore E = 5$$

4

Si  $\cos\alpha = 0,96$  y  $\alpha$  es la medida de un ángulo agudo, efectúe

$$P = \tan\alpha + \sec\alpha$$

## RESOLUCIÓN

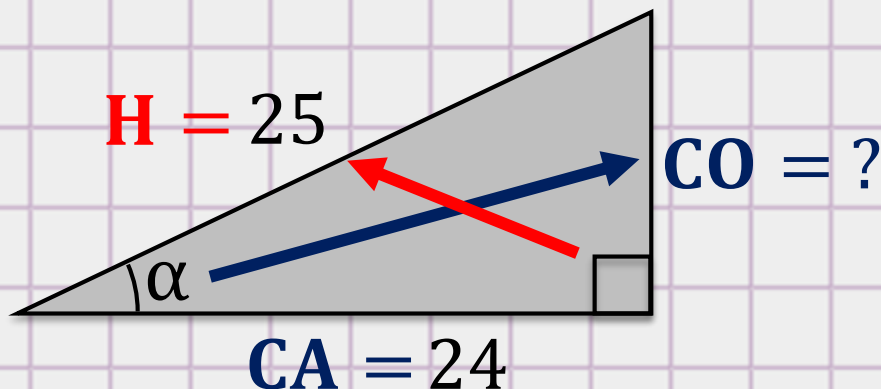
Por dato:

$$\cos\alpha = 0,96 = \frac{96}{100} = \frac{24}{25} = \frac{CA}{H}$$

¡Recordamos!

$$\tan\alpha = \frac{CO}{CA}$$

$$\sec\alpha = \frac{H}{CA}$$



Por teorema de Pitágoras:

$$H^2 = CO^2 + CA^2$$

$$25^2 = CO^2 + 24^2$$

$$625 = CO^2 + 476$$

$$49 = CO^2 \rightarrow CO = 7$$

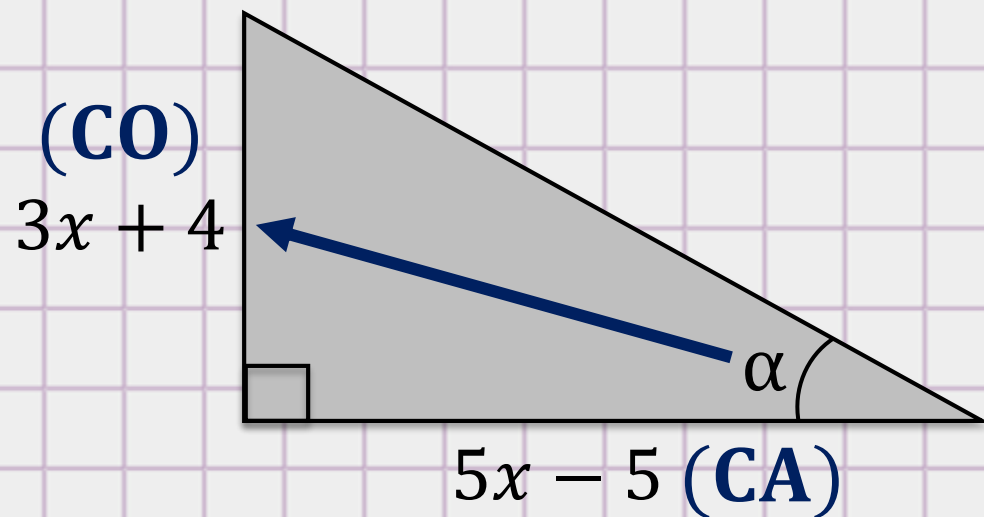
Efectuamos:

$$P = \frac{7}{24} + \frac{25}{24} = \frac{32}{24} = \frac{4}{3}$$

$$\therefore P = \frac{4}{3}$$

5

Del gráfico, calcule el valor de  $x$  si  $\tan \alpha = \frac{4}{5}$ .



¡Recordamos!

$$\tan \alpha = \frac{CO}{CA}$$

## RESOLUCIÓN

Del dato:  $\tan \alpha = \frac{4}{5} \dots (1)$

Del gráfico:  $\tan \alpha = \frac{3x + 4}{5x - 5} \dots (2)$

Igualamos (2) y (1):

$$\frac{3x + 4}{5x - 5} = \frac{4}{5}$$

$$15x + 20 = 20x - 20$$

$$40 = 5x$$

$$\therefore x = 8$$

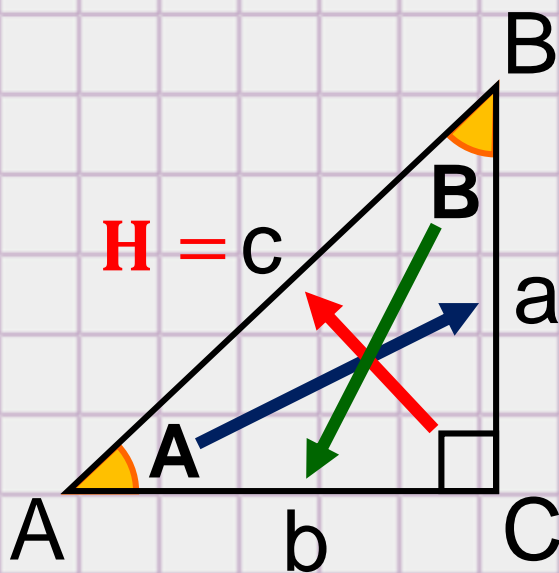
6

En un triángulo rectángulo ABC ( $m\angle C = 90^\circ$ ), reduzca

$$K = 6\operatorname{sen}A \cdot \sec B + 4\tan A \cdot \tan B$$

## RESOLUCIÓN

Graficamos el triángulo rectángulo:



	CO	CA
$\angle A$	a	b
$\angle B$	b	a



¡Recordamos!

$$\operatorname{sen}\theta = \frac{CO}{H}$$

$$\sec\theta = \frac{H}{CA}$$

$$\tan\theta = \frac{CO}{CA}$$

Efectuamos

$$K = 6 \cdot \frac{a}{c} \cdot \frac{c}{a} + 4 \cdot \frac{a}{b} \cdot \frac{b}{a}$$

$$K = 6 + 4$$

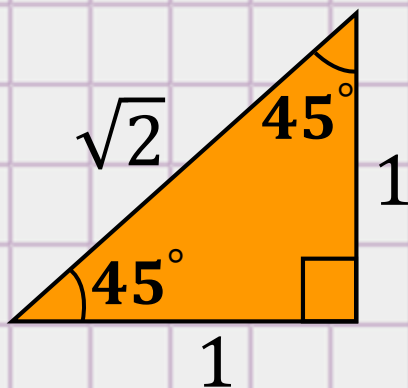
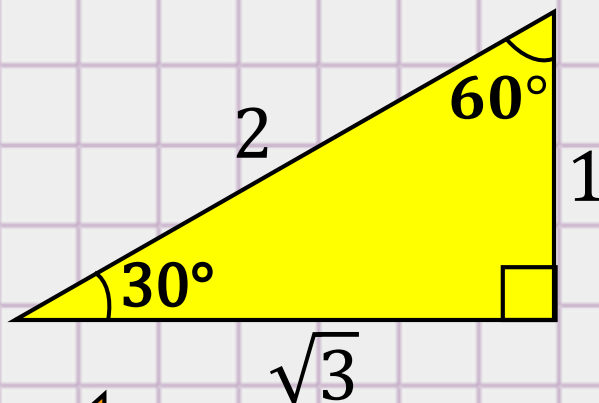
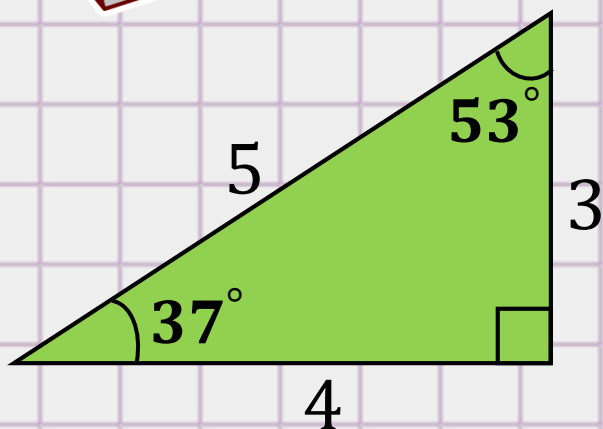
$$\therefore K = 10$$

7

Efectúe



¡Recordamos!



$$G = 10 \cos 53^\circ \cdot \operatorname{sen} 30^\circ \cdot \tan 45^\circ$$

RESOLUCIÓN

Reemplazamos en la expresión:

$$G = 10 \cdot \frac{3}{5} \cdot \frac{1}{2} \cdot 1$$

$$G = \frac{30}{10}$$

$$\therefore G = 3$$



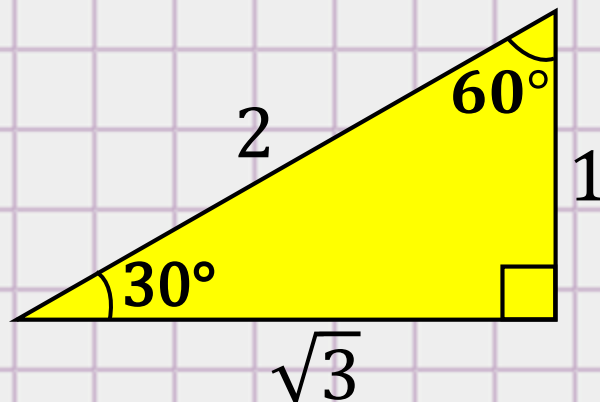
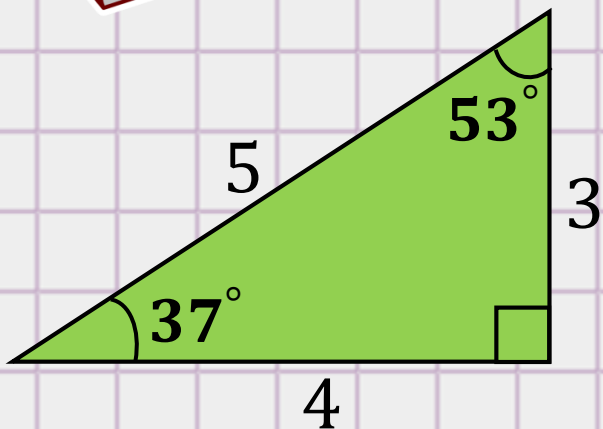
8

Calcule el valor de  $x$ , si

$$\frac{10\cos 37^\circ}{\cot^2 30^\circ} = \frac{2x + 2}{2x - 3}$$



¡Recordamos!



## RESOLUCIÓN

Reemplazamos en la igualdad:

$$\frac{\cancel{10}^2 \cdot \frac{\cancel{4}}{\cancel{5}_1}}{\cancel{\sqrt{3}}^2} = \frac{2x + 2}{2x - 3}$$

$$\frac{8}{3} \neq \frac{2x + 2}{2x - 3}$$

$$16x - 24 = 6x + 6$$

$$10x = 30$$

$$\therefore x = 3$$

9

Si  $\tan \phi = \text{sen} 37^\circ$ , siendo  $\phi$  la medida de un ángulo agudo, efectúe

$$M = \sqrt{34} (\text{sen} \phi + \cos \phi)$$

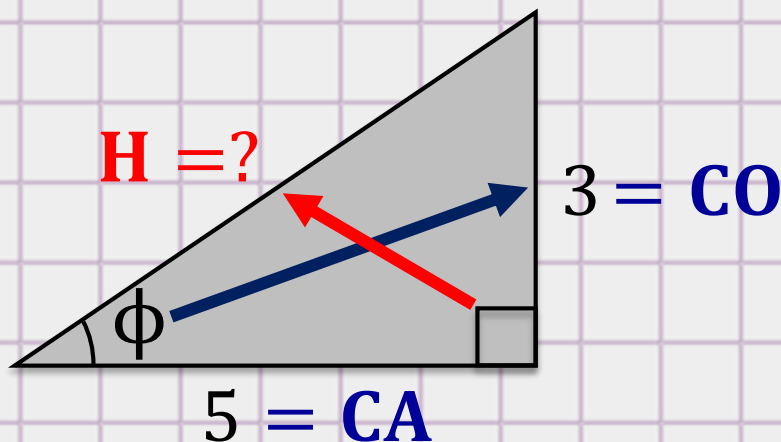
## RESOLUCIÓN

Dato:  $\tan \phi = \frac{3}{5} = \frac{\text{CO}}{\text{CA}}$

¡Recordamos!

$$\text{sen} \phi = \frac{\text{CO}}{H}$$

$$\cos \phi = \frac{\text{CA}}{H}$$



Por teorema de Pitágoras:

$$H^2 = \text{CO}^2 + \text{CA}^2$$

$$H^2 = 5^2 + 3^2$$

$$H^2 = 25 + 9$$

$$H^2 = 34 \rightarrow H = \sqrt{34}$$

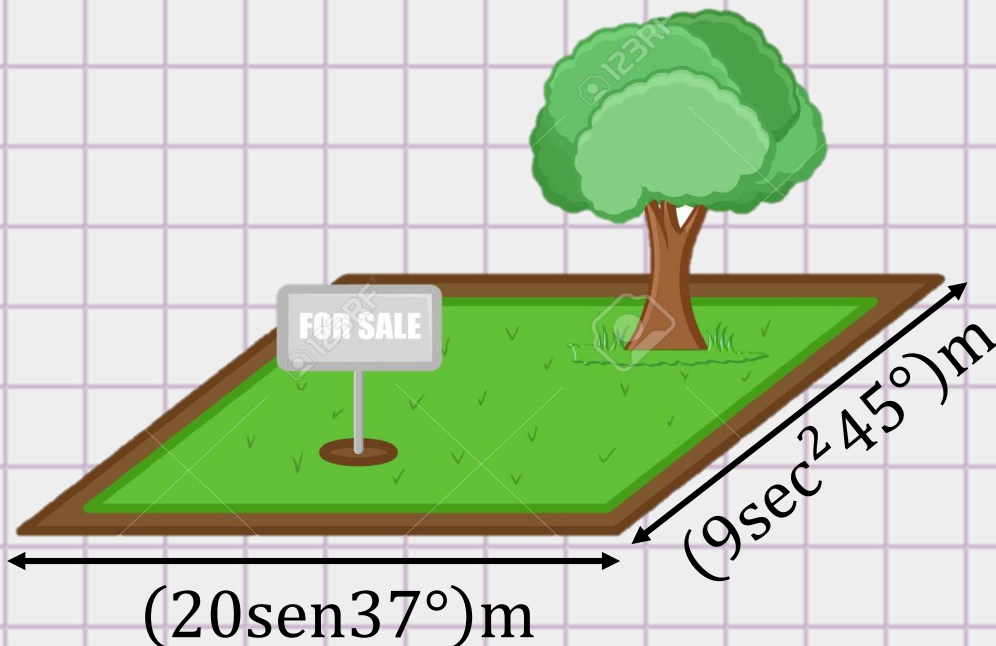
Efectuamos:

$$M = \sqrt{34} \left( \frac{3}{\sqrt{34}} + \frac{5}{\sqrt{34}} \right) = \cancel{\sqrt{34}} \left( \frac{8}{\cancel{\sqrt{34}}} \right)$$

$$\therefore M = 8$$

10

David desea comprar un terreno en El Agustino que tiene forma rectangular. Si cada metro cuadrado cuesta \$800, ¿cuánto invertirá en su compra?



## RESOLUCIÓN

### Dimensiones del terreno:

$$\begin{aligned} \bullet \quad 20\text{sen}37^\circ &= \cancel{20}^4 \cdot \frac{\cancel{3}}{\cancel{5}_1} = 4 \cdot 3 = 12 \text{ m} \\ \bullet \quad 9\text{sec}^2 45^\circ &= 9 \cdot \cancel{\sqrt{2}}^2 = 9 \cdot 2 = 18 \text{ m} \end{aligned}$$

### Área del terreno (S):

$$S = (12\text{m})(18\text{m}) \rightarrow S = 216\text{m}^2$$

### Inversión por el terreno (C):

$$C = (216)(800) \rightarrow C = \$172\,800$$

The logo features the text "SACO OLIVEROS" in a bold, white, sans-serif font. The text is centered within a square frame that is divided diagonally from the top-left to the bottom-right. The top-left triangle of the square is a lighter shade of red, while the bottom-right triangle is a darker shade of red. The entire logo is set against a solid red background.

**SACO**  
**OLIVEROS**