



TRIGONOMETRY

TOMO 2

3rd
SECONDARY

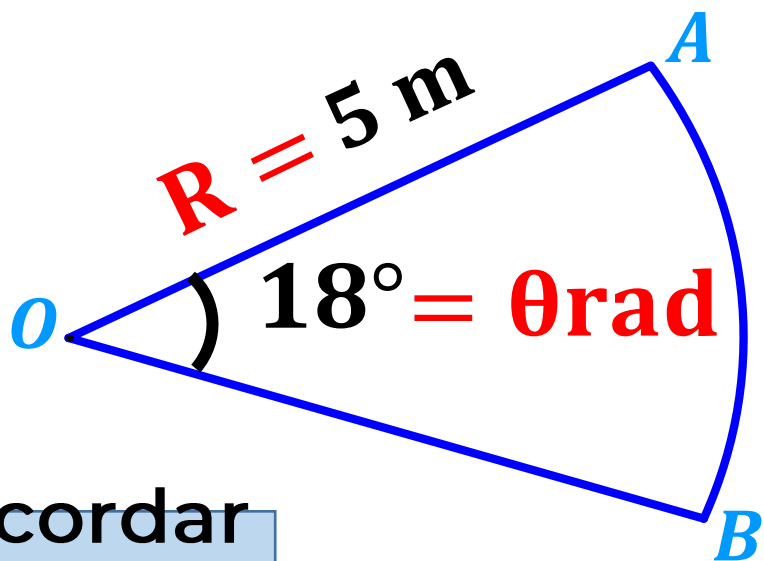
FEEDBACK



 **SACO OLIVEROS**

1

¿Cuál es el área de un sector circular cuyo ángulo central mide 18° y su radio mide 5m?



Recordar

:



Área del sector circular:

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

RESOLUCIÓN:

Convertimos el ángulo al sistema radial:

$$\theta_{\text{rad}} = 18^\circ \times \frac{\pi \text{ rad}}{180^\circ} = \frac{\pi}{10} \text{ rad}$$

$$\Rightarrow \theta_{\text{rad}} = \frac{\pi}{10} \text{ rad} \Rightarrow \theta = \frac{\pi}{10}$$

Área del sector circular

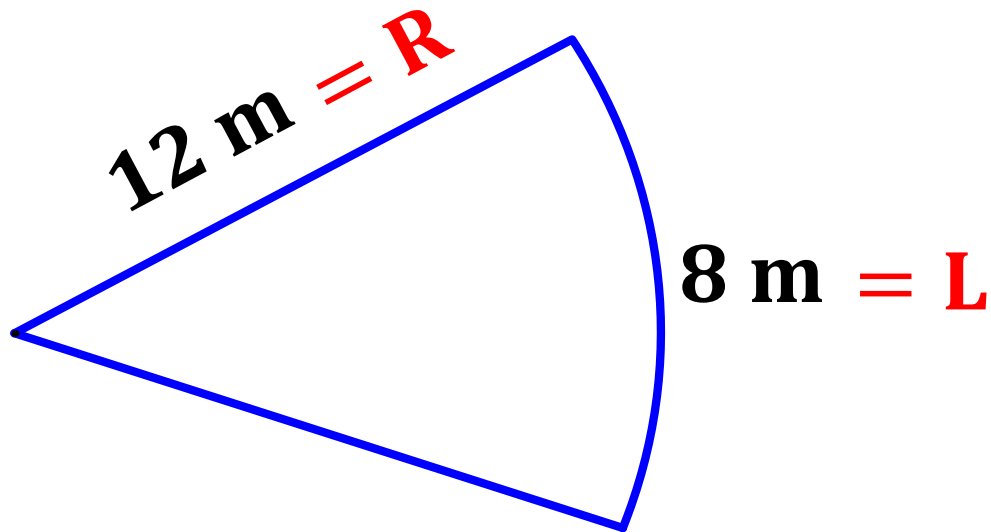
$$\Rightarrow S = \frac{1}{2} \left(\frac{\pi}{10} \right) (5 \text{ m})^2$$

$$S = \frac{25\pi}{20} \text{ m}^2$$

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

2

Del gráfico, calcule el área del sector AOB.



Recordar:



Área
del
sector
circular:

$$S = \frac{LR}{2}$$

RESOLUCIÓN:

Calculamos el área del sector circular



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

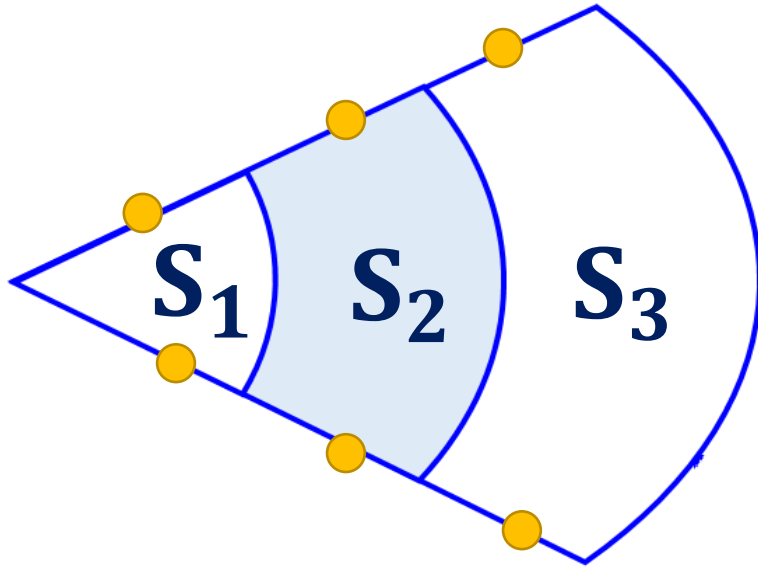
$$S = \frac{96\text{ m}^2}{2}$$

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

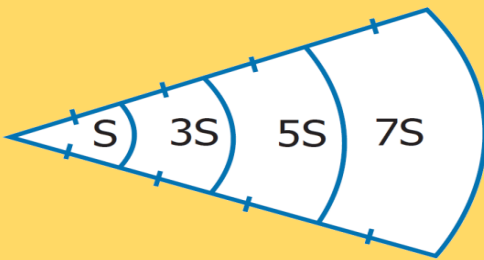
3

Del gráfico, calcule

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



Recordar:



RESOLUCIÓN:

Aplicando la propiedad

$$S_1 = S$$

$$S_2 = 3S$$

$$S_3 = 5S$$

Reemplazamos:

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

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

$$\therefore E = 5$$

4

Siendo: $\text{sen}\alpha = 0,96$ y α es ángulo agudo, efectúe:

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

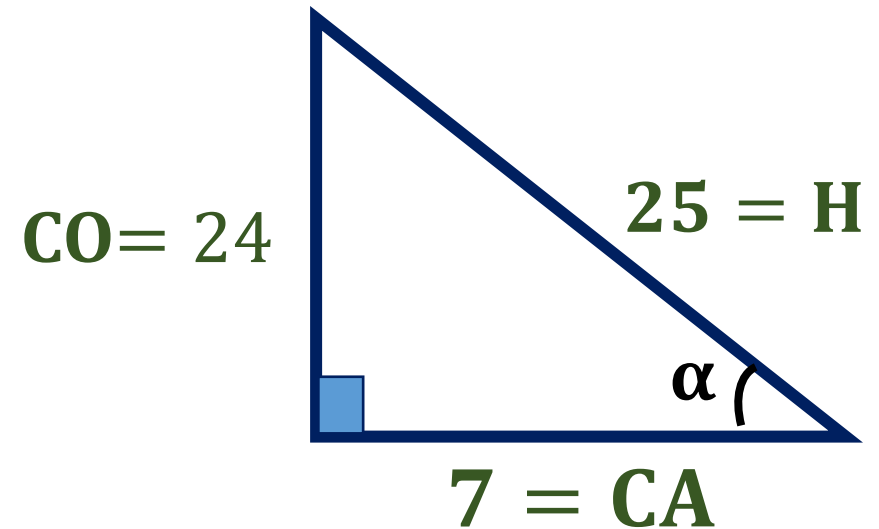
Dato :

$$\text{sen}\alpha = \frac{CO}{H} = \frac{96}{100} = \frac{24}{25}$$



Recordar:

$$\text{sen}\alpha = \frac{CO}{H} \quad \tan\alpha = \frac{CO}{CA} \quad \sec\alpha = \frac{H}{CA}$$



Luego:

$$25^2 = (CA)^2 + (24)^2 \Rightarrow CA = 7$$

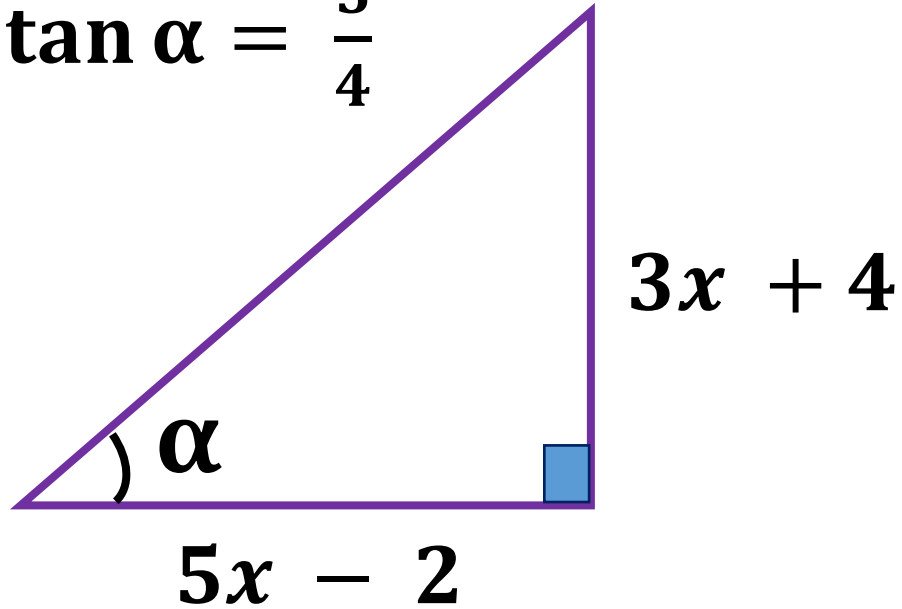
Reemplazamos:

$$P = \frac{24}{7} + \frac{25}{7} = \frac{49}{7} = 7$$

$$\therefore P = 7$$

5

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



Recordar:



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

RESOLUCIÓN:

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

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

Igualamos (1) y (2)

$$\frac{5}{4} = \frac{3x + 4}{5x - 2}$$

$$5(5x - 2) = 4(3x + 4)$$

$$25x - 10 = 12x + 16$$

$$13x = 26$$

$$\therefore x = 2$$

6

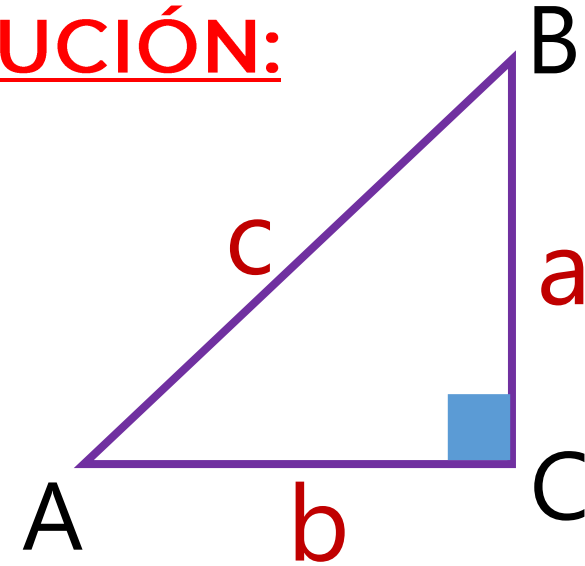
En un triángulo rectángulo ABC ($m\angle C = 90^\circ$), reduzca $K = 6\operatorname{sen}A \cdot \sec B + 4\tan A \cdot \tan B$



Recordar:

$$\operatorname{sen}\alpha = \frac{\text{CO}}{\text{H}} \quad \sec\alpha = \frac{\text{H}}{\text{CA}} \quad \tan\alpha = \frac{\text{CO}}{\text{CA}}$$

RESOLUCIÓN:



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

$$K = 6\left(\frac{a}{c}\right)\left(\frac{c}{a}\right) +$$

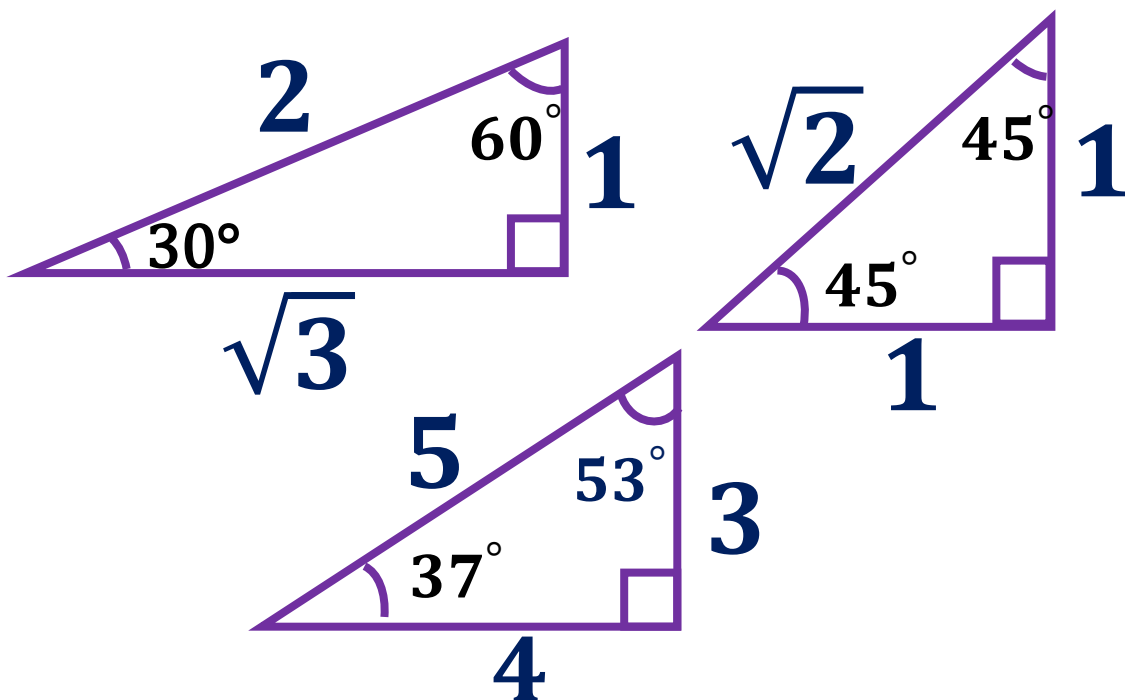
$$4\left(\frac{a}{b}\right)\left(\frac{b}{a}\right)$$

$$\therefore K = 10$$

7

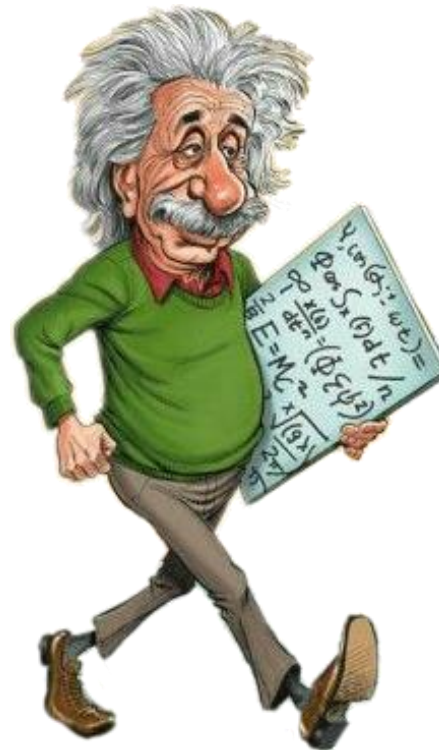
Efectúe:

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

RESOLUCIÓN:

$$E = \left(\frac{3}{5}\right) \left(\frac{1}{2}\right) (1)$$

$$E = \frac{(3) \cdot (1) \cdot (1)}{(5) \cdot (2)}$$



$$\therefore E = \frac{3}{10}$$

8

Halle el valor de x ,
si:

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

RESOLUCIÓN:

$$\frac{\cancel{10}^2 \left(\cancel{\frac{4}{5}} \right)^1}{\sqrt{3}^2} = \frac{2x+2}{2x-3}$$

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

$$8(2x-3) = 3(2x+2)$$

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

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

$$10x = 30$$

$$\therefore x = 3$$



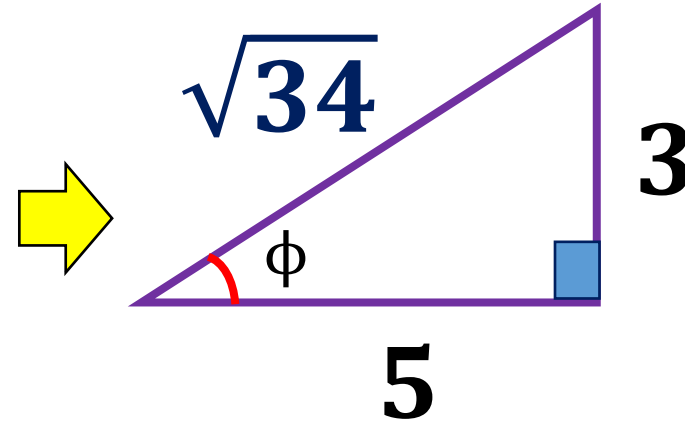
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Si $\tan \phi = \frac{3}{5}$, siendo ϕ un ángulo agudo; efectúe:
 $M = \sqrt{34}(\sin \phi + \cos \phi)$

RESOLUCIÓN:

Del dato tenemos:

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



Calculamos:

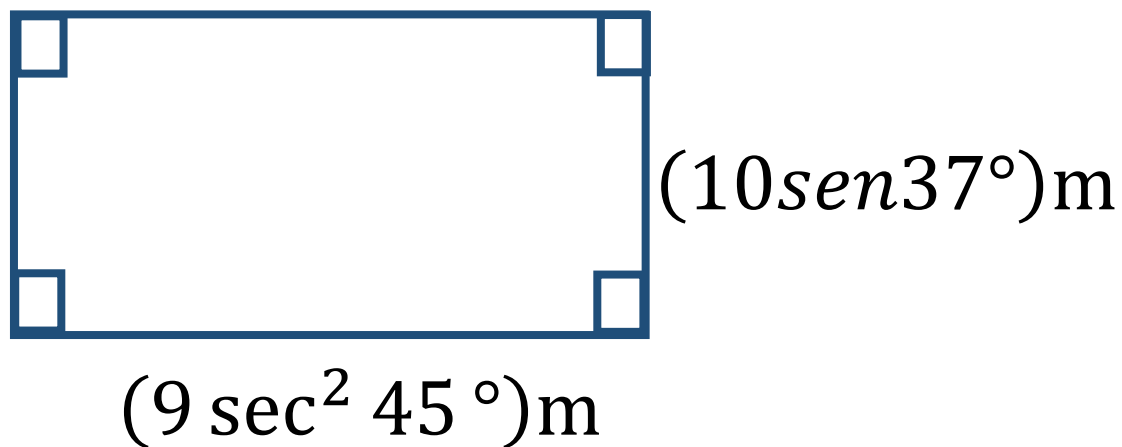
$$M = \sqrt{34}(\sin \phi + \cos \phi)$$

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

$$\therefore M = 8$$

10

David desea comprar un terreno en el Agustino que tiene forma rectangular, si cada metro cuadrado esta \$900 ¿Cuánto estará el terreno?



RESOLUCIÓN:

Dimensiones del terreno

$$(10 \operatorname{sen} 37^\circ) \text{ m} = \left(10 \cdot \frac{3}{5} \right) \text{ m} = 6 \text{ m}$$

$$(9 \operatorname{sec}^2 45^\circ) \text{ m} = \left(9 \sqrt{2}^2 \right) \text{ m} = 18 \text{ m}$$

Área del terreno

$$S = (6 \text{ m})(18 \text{ m}) \rightarrow S = 108 \text{ m}^2$$

Costo del terreno

$$C = (108)(900) \rightarrow \therefore \$ 97200$$