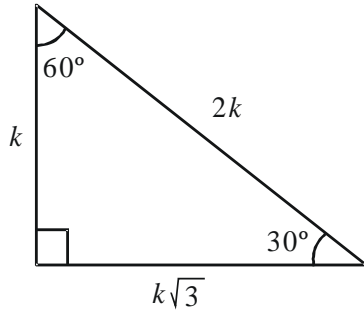




ÁNGULOS AGUDOS DE 30 – 60 GRADOS

PRINCIPIOS TEÓRICOS

Para definir las R.T. de 30° y 60° utilizaremos el triángulo.



Entonces:

$$\operatorname{sen} 30^\circ = \frac{c.o}{h} \Rightarrow \operatorname{sen} 30^\circ = \frac{k}{2k} \Rightarrow \operatorname{sen} 30^\circ = \frac{1}{2}$$

$$\operatorname{cos} 30^\circ = \frac{c.a}{h} \Rightarrow \operatorname{cos} 30^\circ = \frac{k\sqrt{3}}{2k} \Rightarrow \operatorname{cos} 30^\circ = \frac{\sqrt{3}}{2}$$

$$\operatorname{tg} 30^\circ = \frac{c.o}{c.a} \Rightarrow \operatorname{tg} 30^\circ = \frac{k}{k\sqrt{3}} \Rightarrow \operatorname{tg} 30^\circ = \frac{1}{\sqrt{3}} = \frac{3}{\sqrt{3}} \text{ (Por racionalización)}$$

$$\operatorname{ctg} 30^\circ = \frac{c.a}{c.o} \Rightarrow \operatorname{ctg} 30^\circ = \frac{k\sqrt{3}}{k} \Rightarrow \operatorname{ctg} 30^\circ = \sqrt{3}$$

$$\operatorname{sec} 30^\circ = \frac{h}{c.o} \Rightarrow \operatorname{sec} 30^\circ = \frac{2k}{k} \Rightarrow \operatorname{sec} 30^\circ = \frac{2}{\sqrt{3}} = \frac{2\sqrt{3}}{3} \text{ (Por Racionalización)}$$

$$\operatorname{csc} 30^\circ = \frac{h}{c.o} \Rightarrow \operatorname{csc} 30^\circ = \frac{2k}{k} \Rightarrow \operatorname{csc} 30^\circ = 2$$

Así también:

$$\operatorname{sen} 60^\circ = \frac{\text{c.o.}}{h} = \frac{k\sqrt{3}}{2k} = \frac{\sqrt{3}}{2}$$

$$\operatorname{cos} 60^\circ = \frac{\text{c.a.}}{h} = \frac{k}{2k} = \frac{1}{2}$$

$$\operatorname{tg} 60^\circ = \frac{\text{c.o.}}{\text{c.a.}} = \frac{k\sqrt{3}}{k} = \sqrt{3}$$

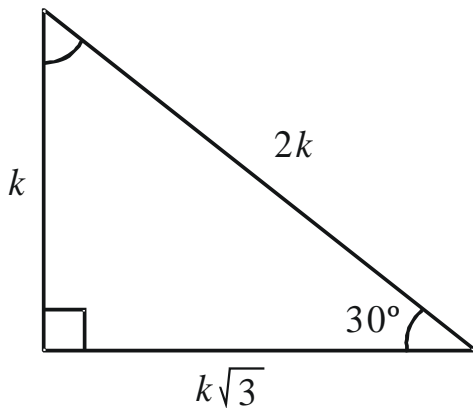
$$\operatorname{ctg} 60^\circ = \frac{\text{c.a.}}{\text{c.o.}} = \frac{k}{k\sqrt{3}} = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3} \text{ (Por Racionalización)}$$

$$\operatorname{sec} 60^\circ = \frac{h}{\text{c.a.}} = \frac{2k}{k} = 2$$

$$\operatorname{csc} 60^\circ = \frac{h}{\text{c.o.}} = \frac{2k}{k\sqrt{3}} = \frac{2}{\sqrt{3}} = \frac{2\sqrt{3}}{3} \text{ (Por Racionalización)}$$

Ejemplos:

1. Calcular la $\operatorname{tg} 30^\circ$



Resolución

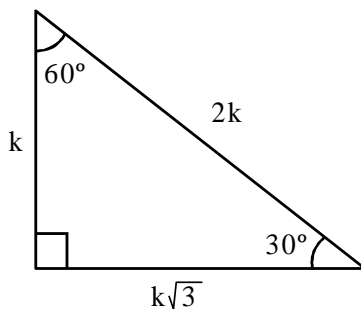
Sabemos que:

$$\operatorname{tg} 30^\circ = \frac{\text{Cateto Opuesto}}{\text{Cateto Adyacente}}$$

$$\operatorname{tg} 30^\circ = \frac{k}{k\sqrt{3}} \Rightarrow \operatorname{tg} 30^\circ = \frac{1}{\sqrt{3}}$$

$$\boxed{\operatorname{tg} 30^\circ = \frac{\sqrt{3}}{3}}$$

2. Calcular la $\operatorname{csc} 60^\circ$



Resolución

Sabemos que:

$$\operatorname{csc} 60^\circ = \frac{\text{hipotenusa}}{\text{Cateto Opuesto}}$$

$$\operatorname{csc} 60^\circ = \frac{2k}{k\sqrt{3}}$$

$$\operatorname{csc} 60^\circ = \frac{2}{\sqrt{3}}$$

$$\operatorname{csc} 60^\circ = \frac{2\sqrt{3}}{3}$$

COMPLETA

\sphericalangle	Sen	Cos	Tg	Ctg	Sec	Csc
30°						
60°						

PRACTIQUEMOS

- Calcular el valor de:
 $M = \text{sen}30^\circ + \text{cos}60^\circ$
- Calcular el valor de "P"
 $P = \text{tg}30^\circ \cdot \text{ctg}30^\circ$
- Calcular 4sen^230°
- Calcular el valor de:
 $Q = \text{tg}30^\circ \cdot \text{ctg}30^\circ$
- Calcular el valor de:
 $\text{Sen}^230^\circ + \text{cos}^230^\circ$
- Calcular $M = \frac{\text{sen}30^\circ}{\text{csc}30^\circ}$
- Calcular $P = \frac{\text{sen}30^\circ}{\text{cos}60^\circ}$
- Calcular $P = \frac{\text{tg}30^\circ}{\text{ctg}60^\circ}$
- Calcular $N = \frac{8\text{sen}30^\circ}{\text{cos}60^\circ}$
- Calcular $M = \frac{\text{csc}30^\circ}{\text{sen}30^\circ}$

PROBLEMAS PROPUESTOS

- Calcular $(\text{ctg}60^\circ)^2$
- Calcular el valor de "X" si
 $\text{tg}30^\circ \cdot \text{ctg}60^\circ = X$
- Calcular $P = \text{sen}30^\circ - \frac{1}{2}$
- Calcular $P = \frac{\text{sen}30^\circ}{4}$
- Calcular $\text{sen}^260^\circ + \text{cos}^260^\circ$
- Calcular el valor de "M"
 $M = \text{tg}60^\circ \cdot \sqrt{3} + 4\text{sen}30^\circ$
- Calcular "x" si:
 $\text{sen}30^\circ = 2x$
- Calcular el valor de "M"
 $M = 2\sqrt{3}\text{sec}30^\circ + \sqrt{3}\text{csc}60^\circ$

5. Calcular "x" si
 $8\cos 60^\circ = x$

10. Calcular el valor de "H"
 $H = \sec 30^\circ + \operatorname{tg} 30^\circ$

TRIGONOMETRIA