Revisar tarea

Obteniendo un ángulo a partir del seno o el coseno.

2. Using your calculator, find

   a) arcsin 1. 90°

   b) arccos 0.7071067811865. 45°

3. Using your calculator, find the angle whose cosine is .8. 36.86°

4. Using your calculator, find the angle whose sine is .6. 36.86°

$(.8)^2 + (.6)^2 = 1$

5. We know that $\sin 30^\circ = .5$. Write down your estimate for $\sin 15^\circ$, then check your estimate with the value from a table or calculator.

$\sin 15^\circ \approx .2$ X

.24 Sofía

.25 Bruno

.25 Admé

.25 Karen

Sabemos:

$\text{sen}\,0^\circ = 0 < \text{sen}\,15^\circ < \text{sen}\,30^\circ = .5$

$\text{sen}\,15^\circ \approx .26$

↑ calculadora.

OJO: Más adelante probaremos que

$\cos^2\theta + \operatorname{sen}^2\theta = 1$

$$\operatorname{sen} 2\theta = 2\operatorname{sen}\theta\cos\theta \quad \text{y}$$

$$\cos 2\theta = \cos^2\theta - \operatorname{sen}^2\theta = 2\cos^2\theta - 1 = 1 - 2\operatorname{sen}^2\theta$$

Despejando $\cos\theta$ de esta última, vemos que

$$\cos\theta = \sqrt{\frac{1+\cos 2\theta}{2}}$$

o equivalentemente

$\theta = \frac{\alpha}{2}$

$$\cos\frac{\alpha}{2} = \sqrt{\frac{1+\cos\alpha}{2}}$$

$$\operatorname{sen}\theta = \sqrt{\frac{1-\cos 2\theta}{2}}$$

ó

$$\operatorname{sen}\frac{\alpha}{2} = \sqrt{\frac{1-\cos\alpha}{2}}$$

En el ejercicio anterior nos piden $\operatorname{sen} 15^\circ$,

pero sabemos $\cos 30^\circ = \frac{\sqrt{3}}{2}$, así que

$$\operatorname{sen} 15^\circ = \sqrt{\frac{1-\frac{\sqrt{3}}{2}}{2}} = \sqrt{\frac{2-\sqrt{3}}{4}} = \frac{1}{2}\sqrt{2-\sqrt{3}}$$

8. If $\arcsin x = 60^\circ$, find x, without using a calculator.

$\operatorname{sen}^{-1} x$

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

9. Using your calculator, find $\arcsin(\sin 17^\circ)$.

17°

¿Qué número es el doble de la mitad de 17?

Resolviendo triángulos rectángulos.

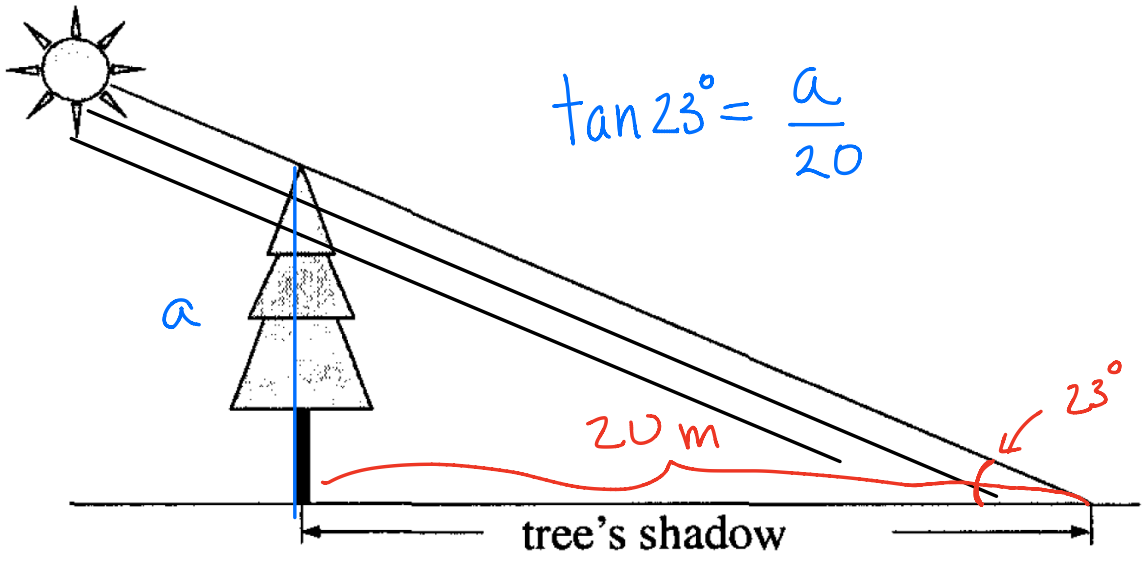
1. Find the legs of a right triangle with hypotenuse 9 and an acute angle of 72 degrees.

2. The two legs of a right triangle are 7 and 10. Find the hypotenuse and the two acute angles.

3. A right triangle has a leg of length 12. If the acute angle opposite this leg measures 27 degrees, find the other leg, the other acute angle, and the hypotenuse.

4. A right triangle has a leg of length 20. If the acute angle adjacent to this leg measures 73 degrees, find the other leg, the other acute angle, and the hypotenuse.

Sombras y otras aplicaciones



$$\tan 23^\circ = \frac{a}{20}$$

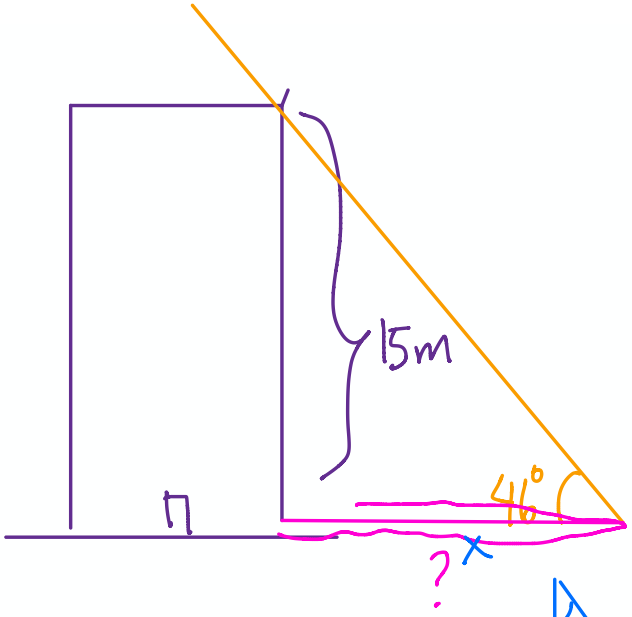
Suponemos que los rayos del sol vienen paralelos y que en este momento hacen un ángulo de 23° con el suelo (que suponemos plano)

Si la sombra mide 20 m. ¿Qué tan alto es el árbol?

$\tan 23^\circ = \frac{a}{20} \Rightarrow a = 20 \tan 23^\circ$

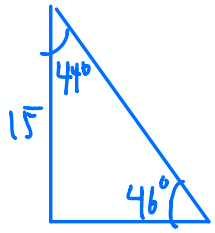
$\approx 8.5\text{ m}.$

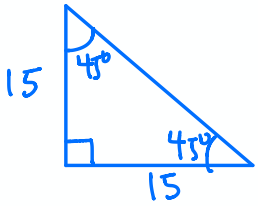
1. When the sun's rays make an angle with the ground of 46 degrees, how long is the shadow cast by a building ~~50 feet~~ 15 m high?



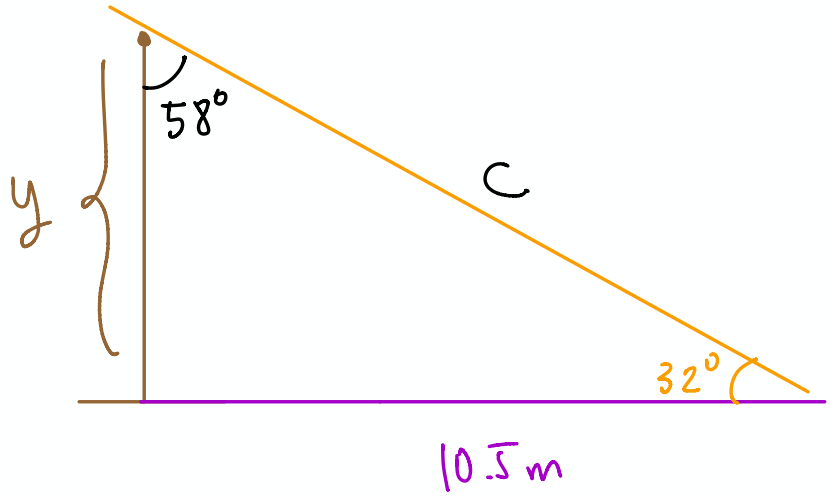
$\tan 46^\circ = \frac{15}{x}$

$x = \frac{15}{\tan 46^\circ} = 14.48$





2. At a certain moment, the sun's rays strike the earth at an angle of 32 degrees. At that moment, a flagpole casts a shadow which is ~~35 feet~~ 10.5m. long. How tall is the flagpole?



$\tan 32^\circ = \frac{y}{10.5} \Rightarrow y = 10.5 \tan 32^\circ = 6.5$

$\cos 32^\circ = \frac{10.5}{c} \Rightarrow c = \frac{10.5}{\cos 32^\circ} \Rightarrow$ Pitagoras ✓

$y^2 = c^2 - (10.5)^2$