

October 30

How is the  $\arccos(x)$  different  
from the  $\arcsin(x)$ ?



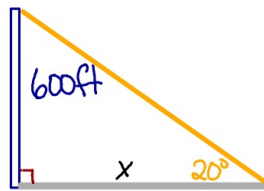
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Students will verbally explain how to  
use trig functions to model and solve  
real-world problems.

(using the words:  
domain, range, angle ...)



If the sun is  $20^\circ$  above the horizon, find the length of a shadow cast by a building that is 600 feet tall.



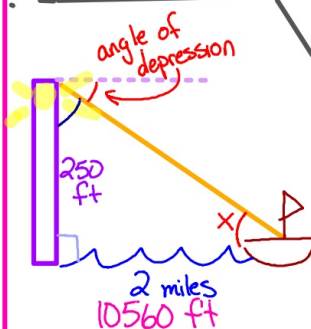
$$\tan(20) = \frac{600}{x}$$

$$x(\tan(20)) = \frac{600}{x} \cdot x$$

$$x \tan(20) = 600$$

$$x = \frac{600}{\tan(20)} = 1648.486 \text{ ft}$$

Find the angle of depression from the top of a lighthouse 250 feet above water level to the water line of a ship 2 miles off shore



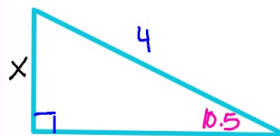
$$\tan x = \frac{250}{10560}$$

$$\tan^{-1}(\tan x) = \tan^{-1}\left(\frac{250}{10560}\right)$$

$$x = \tan^{-1}\left(\frac{250}{10560}\right)$$

$$x = 1.356^\circ$$

A sign on the roadway at the top of a mountain indicates that for the next 4 miles the grade is  $10.5^\circ$ . Find the change in elevation for a car descending the mountain.

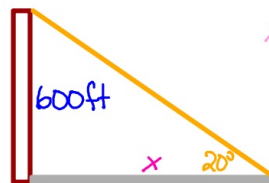


$$\sin(10.5) = \frac{x}{4}$$

$$4 \sin(10.5) = x$$

$$.729 \text{ miles} = x$$

If the sun is  $20^\circ$  above the horizon, find the length of a shadow cast by a building that is 600 feet tall.

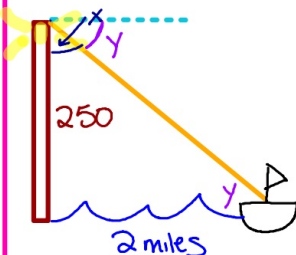


$$x \cdot \tan 20 = \frac{600}{x} \cdot x$$

$$x \tan 20 = 600$$

$$x = \frac{600}{\tan 20} = 1648.486 \text{ ft}$$

Find the angle of depression from the top of a lighthouse 250 feet above water level to the water line of a ship 2 miles off shore



$$2 \text{ miles} = 10560 \text{ ft}$$

$$\tan x = \frac{10560}{250}$$

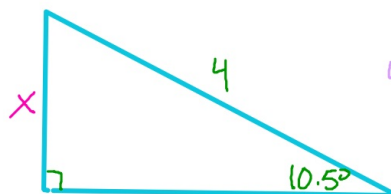
$$\tan^{-1}(\tan x) = \tan^{-1}\left(\frac{10560}{250}\right)$$

$$x = \tan^{-1}\left(\frac{10560}{250}\right)$$

$$x = 88.644^\circ$$

$$y = 90 - x = 1.356^\circ$$

A sign on the roadway at the top of a mountain indicates that for the next 4 miles the grade is  $10.5^\circ$ . Find the change in elevation for a car descending the mountain.



$$4 \sin(10.5) = \frac{x}{4} \cdot 4$$

$$4 \sin(10.5) = x$$

$$x = .729 \text{ miles}$$

pg 190 #4 - 18 (even), 32,  
36 - 48 (even)

Pg 200

#3, 5, 7, 13, 15, 19,  
20, 25, 31, 35, 48