



Trig - Application **5-18-15**

Be sure to draw a picture and set up the trig. ratio.


- A gangplank is a narrow ramp used for boarding or leaving a ship. The maximum safe angle of elevation for a gangplank is 20° . Suppose a gangplank is 10 feet long. What is the closest a ship can come to the dock for the gangplank to be used?




$10 \cos 20^\circ = \frac{x}{10} \cdot 10$
 $9.4 \text{ ft} = x$
- A ski slope at a mountain has an angle of elevation of 25.2° . The vertical height of the slope is 1808 feet. How long is the ski slope?



$\sin 25.2^\circ = \frac{1808}{x}$
 $x = \frac{1808}{\sin 25.2^\circ} = 4246.3 \text{ ft}$
- A boat is 70 meters from a lighthouse. The measurement of the angle of elevation from the boat to the top of the lighthouse is 52° . Find the height of the lighthouse.




$70 \tan 52^\circ = \frac{x}{70} \cdot 70$
 $x = 89.6 \text{ m}$
- A tree was broken in a violent storm. The top of the tree touches the ground 13 meters from the base. The top of the tree makes an angle of 29° with the ground. How tall was the tree before it was broken?




$13 \tan 29^\circ = \frac{x}{13}$
 $x = 7.2$


$7.2^2 + 13^2 = c^2$
 $51.84 + 169 = c^2$
 $220.84 = c^2$
 $c = 14.86$
 $14.86 + 7.2 = 22.06 \text{ m}$
- How tall is a bridge 6-foot tall person standing 100 feet away can see the top of the bridge at an angle of 30° to the horizon?



$\text{opp} \tan 30^\circ = \frac{x}{100}$
 $x = 57.7 + 6 = 63.7 \text{ ft}$
- You are 100 meters from the base of the Burj Khalifa building in Shanghai, China. You estimate that the angle of elevation to the top of the building is 80° . What is the height of the building?



$75 \tan 80^\circ = \frac{x}{75}$
 $x = 425.3 \text{ m}$
- Suppose your friend is at the top of the building in problem 6. What is the distance between you and your friend?



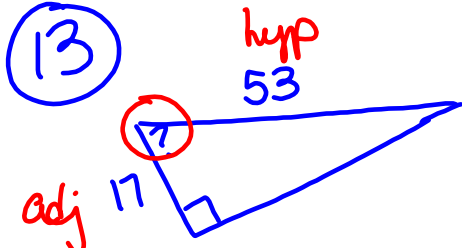
$\cos 80^\circ = \frac{75}{x}$
 $x = \frac{75}{\cos 80^\circ} = 431.9 \text{ m}$

May 11-9:38 AM

11.13, 8

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(13)



$\cos \theta = \frac{17}{53}$

$\theta = \cos^{-1}\left(\frac{17}{53}\right)$

$\theta = 71^\circ$

May 10-9:22 AM

Assignment:
Finish Trig - Application WS

May 11-9:49 AM