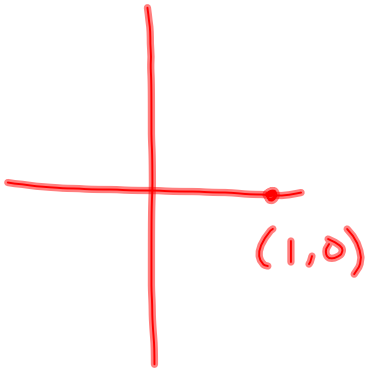
$\csc 0$

$\frac{1}{\sin 0} = \frac{1}{0} = \text{unde.}$

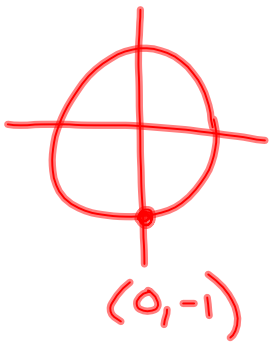


Sep 30-11:37 AM

$\csc \frac{3\pi}{2}$

$\frac{1}{\sin \frac{3\pi}{2}}$

$\frac{1}{-1} = -1$



Sep 30-12:08 PM

$\frac{4\pi}{3}$

$-\frac{1}{2}$

60

$-\frac{\sqrt{3}}{2}$

$\frac{-\frac{\sqrt{3}}{2}}{-\frac{1}{2}}$

$-\frac{\sqrt{3}}{2} \cdot -\frac{2}{1} = -\sqrt{3}$

$\frac{\pi}{3} \to \sqrt{3}$

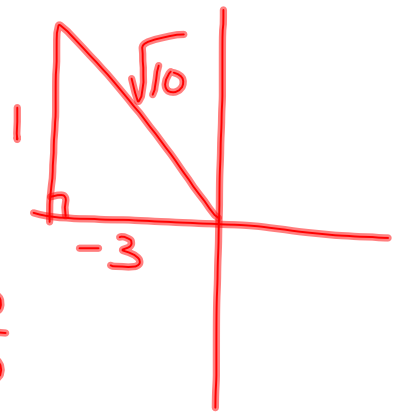
$\frac{\pi}{6} \to \frac{\sqrt{3}}{3}$

Sep 30-12:10 PM

$\cot\theta = -\frac{3}{1}$ $\frac{A}{O}$

$\sin\theta \to \frac{O}{H} = \frac{1}{\sqrt{10}} \cdot \frac{\sqrt{10}}{\sqrt{10}} = \frac{\sqrt{10}}{10}$

II

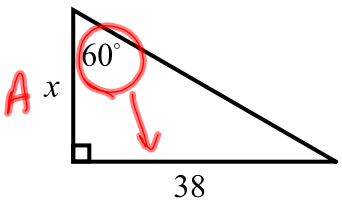


Sep 30-12:11 PM

4.3 - 4.4 Applications (Part II)

Solve for the missing variable.

1.)



A

O

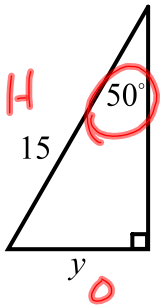
$\frac{\tan 60}{1} = \frac{38}{x}$

$x\tan 60 = 38$

$\frac{x\tan 60}{\tan 60} = \frac{38}{\tan 60}$

$x = 21.9$

2.)



H

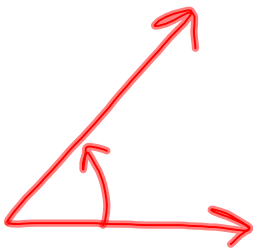
O

$\frac{\sin 50}{1} = \frac{y}{15}$

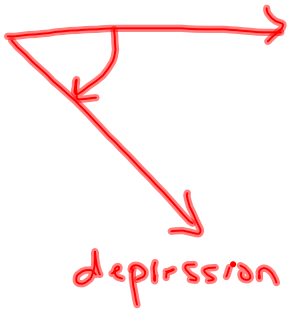
$15\sin 50 = y = 11.5$

Feb 19-9:46 AM

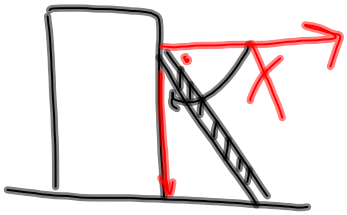
Angles of Elevation vs Angles of Depression



elevation



depression



Sep 28-2:04 PM

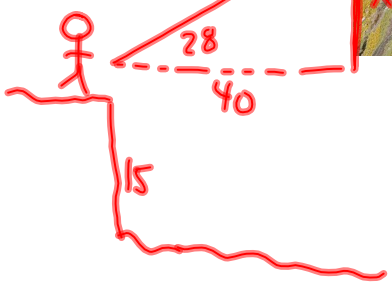
3.) From the top of a 200 ft lighthouse, the angle of depression to a ship in the ocean is 23°. How far is the ship from the base of the lighthouse?

$\tan 23 = \frac{200}{x}$

$x = 471.2\text{ft.}$

Feb 19-9:50 AM

4.) An ornithologist is taking pictures of puffins on the edge of a cliff. To find the height of the puffins above the water, she measures a 28° angle of elevation of her line of sight to the puffins. If her position is about 15 feet above the water, and about 40 feet from the cliff, how high above the water are the puffins?



$\tan 28 = \frac{x}{40}$

$x = 21.3$

$+15$

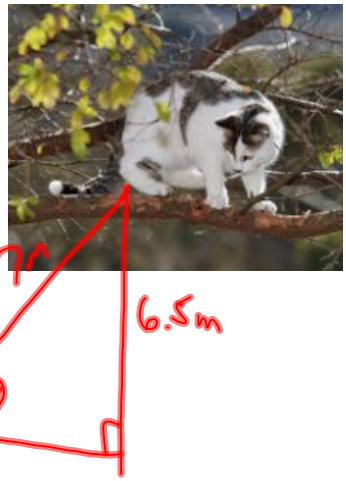
36.3ft.

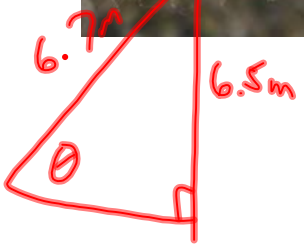
Sep 28-2:04 PM

5.) Your cat is trapped on a tree branch 6.5 meters above the ground. Your ladder is only 6.7 meters long. If you place the ladder's tip on the branch, what angle will the ladder make with the ground?

$\sin^{-1}(6.5/6.7)=\theta$

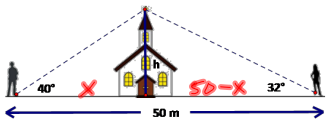
$\theta = 76^\circ$





Sep 28-2:14 PM

6.) Jack and Jill are on either side of the church and 50 m apart. Jack sees the top of the steeple at 40° and Jill sees the top of the steeple at 32°. How high is the steeple?



$\tan 40 = \frac{h}{x}$

$x\tan 40 = h$

$21.3\tan 40 = h$

$h = 17.9\text{m}$

$\tan 32 = \frac{h}{50-x}$

$(50-x)\tan 32 = h$

$.83909x = 31.2435 - .62487x$

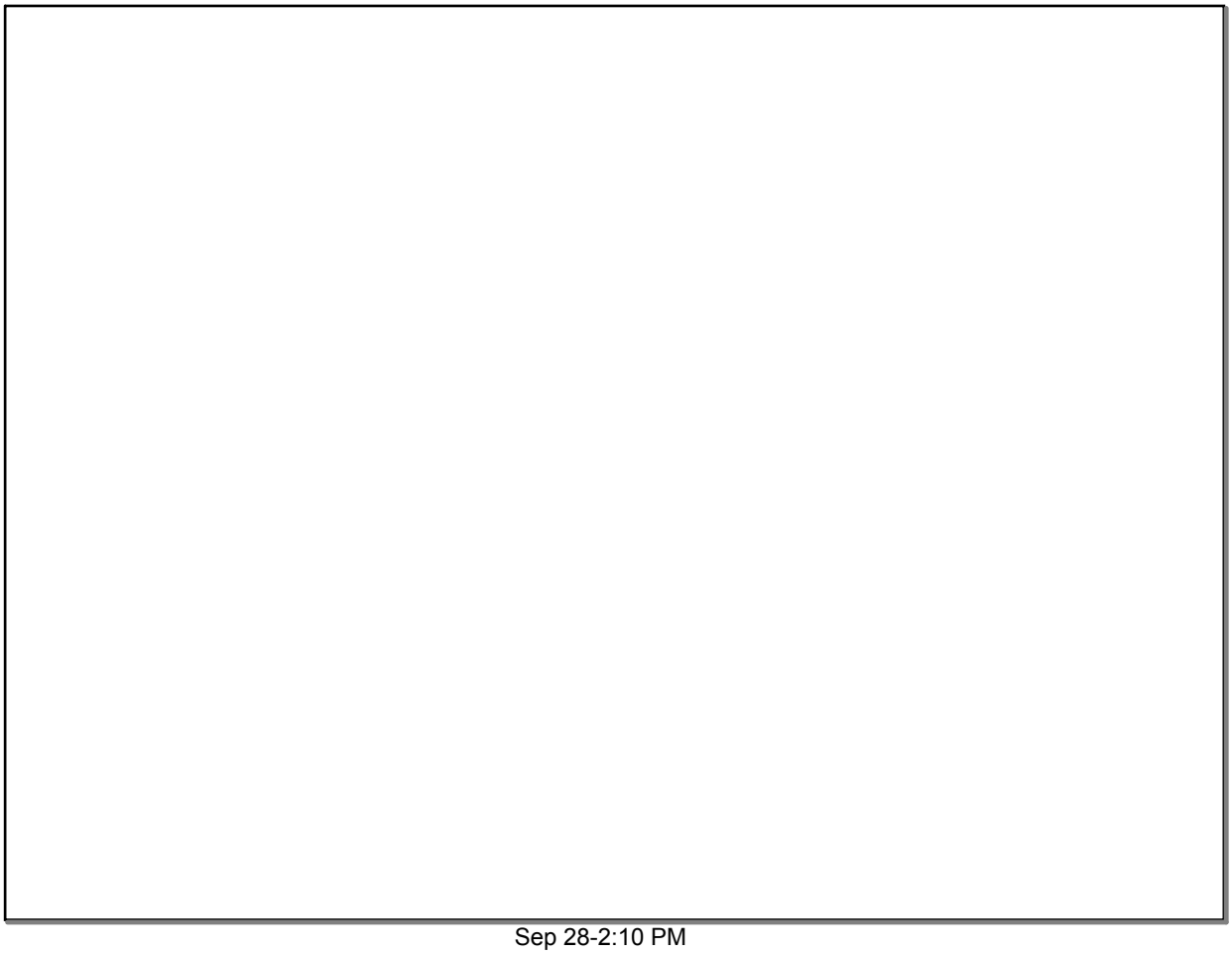
$x\tan 40 = 50\tan 32 - x\tan 32$

$x\tan 40 + x\tan 32 = 50\tan 32$

$\frac{x(\tan 40 + \tan 32)}{\tan 40 + \tan 32} = \frac{50\tan 32}{\tan 40 + \tan 32}$

$x = 21.3$

Sep 28-2:01 PM



Sep 28-2:10 PM