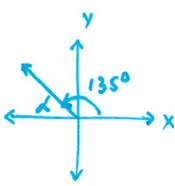


Show work for full credit.

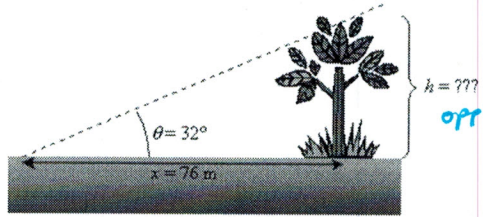
Complete all problems for extra practice. Check your work at the front of the board.

1) Angle:  $135^\circ$   
 Sketch the angle.  
 Write its reference angle.  
 Convert the angle to radians.



Ref  $\angle$ :  
 $\alpha = 180 - 135 = 45^\circ$   
 In radians:  $\frac{\pi}{4}$

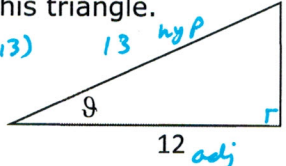
2) Calculate the height of the tree.



$\tan 32^\circ = \frac{h}{76m}$   
 $76 \cdot \tan 32^\circ = h$   
 $\therefore$  The height of the tree is  $\approx 47.5m$

3) Write the six trigonometric ratios for this triangle.

(5, 12, 13)      13 hyp      5 opp



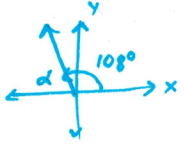
12 adj

$\sin \theta = \frac{5}{13}$        $\csc \theta = \frac{13}{5}$   
 $\cos \theta = \frac{12}{13}$        $\sec \theta = \frac{13}{12}$   
 $\tan \theta = \frac{5}{12}$        $\cot \theta = \frac{12}{5}$

4)  $\frac{3\pi}{5}$

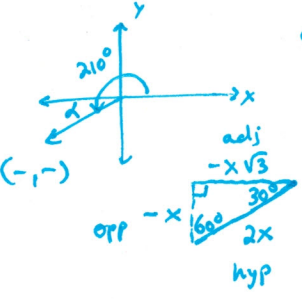
Convert the angle to degrees.  
 Sketch the angle.  
 Write its reference angle.

$\frac{3\pi}{5} \text{ rad} \cdot \frac{180^\circ}{\pi \text{ rad}} = \frac{540^\circ}{5} = 108^\circ$



Ref  $\angle$ :  
 $\alpha = \pi - \frac{3\pi}{5}$   
 $= \frac{5\pi}{5} - \frac{3\pi}{5}$   
 $= \frac{2\pi}{5}$

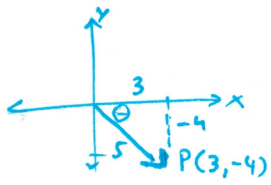
5) Angle:  $210^\circ$   
 Sketch the angle.  
 Write its reference angle.  
 Write the cosine and tangent of this angle.



Ref  $\angle$ :  
 $\alpha = \theta - 180^\circ$   
 $= 210^\circ - 180^\circ$   
 $= 30^\circ$

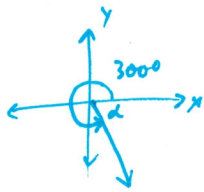
$\cos 210^\circ = \frac{-x\sqrt{3}}{2x} = -\frac{\sqrt{3}}{2}$   
 $\tan 210^\circ = \frac{-x}{-x\sqrt{3}} = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$

6) Graph (3, -4).  
 Write the six trigonometric ratios for this point. (3, 4, 5)



$\sin \theta = \frac{-4}{5}$   
 $\cos \theta = \frac{3}{5}$   
 $\tan \theta = \frac{-4}{3}$   
 $\csc \theta = -\frac{5}{4}$   
 $\sec \theta = \frac{5}{3}$   
 $\cot \theta = -\frac{3}{4}$

- 7) Angle:  $300^\circ$   
 Sketch the angle.  
 Write its reference angle.  
 Convert the angle to radians.

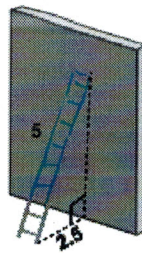


Ref L:

$$\begin{aligned} \alpha &= 360^\circ - \theta \\ &= 360^\circ - 300^\circ \\ &= 60^\circ \end{aligned}$$

$$\begin{aligned} 300^\circ \cdot \frac{\pi \text{ rad}}{180^\circ} &= \frac{300\pi}{180} \text{ rad} \\ &= \frac{5\pi}{3} \text{ rad} \end{aligned}$$

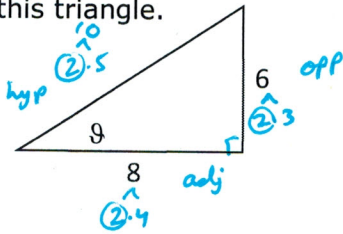
- 8) Calculate the angle made by the ladder.



$$\sin x^\circ = \frac{2.5}{5}$$

$$x^\circ = \sin^{-1}\left(\frac{2.5}{5}\right) \approx 30^\circ$$

- 9) Write the six trigonometric ratios for this triangle.



$$\sin \theta = \frac{6}{10} = \frac{3}{5} \quad \csc \theta = \frac{5}{3}$$

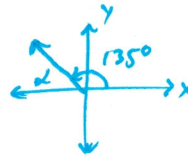
$$\cos \theta = \frac{8}{10} = \frac{4}{5} \quad \sec \theta = \frac{5}{4}$$

$$\tan \theta = \frac{6}{8} = \frac{3}{4} \quad \cot \theta = \frac{4}{3}$$

- 10)  $\frac{3\pi}{4}$

Convert the angle to degrees.  
 Sketch the angle.  
 Write its reference angle.

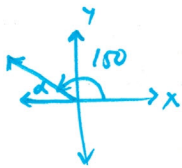
$$\frac{3\pi \text{ rad}}{4} \cdot \frac{180^\circ}{\pi \text{ rad}} = \frac{540^\circ}{4} = 135^\circ$$



Ref L:

$$\begin{aligned} \alpha &= 180^\circ - \theta \\ &= 180^\circ - 135^\circ \\ &= 45^\circ \end{aligned}$$

- 11) Angle:  $150^\circ$   
 Sketch the angle.  
 Write its reference angle.  
 Write the sine and secant of this angle.



Ref L:

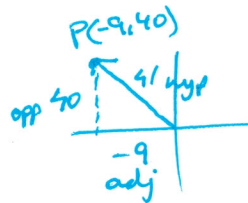
$$\begin{aligned} \alpha &= 180^\circ - \theta \\ &= 180^\circ - 150^\circ \\ &= 30^\circ \end{aligned}$$

$$\sin 150^\circ = \frac{y}{r} = \frac{1}{2}$$

$$\begin{aligned} \sec 150^\circ &= \frac{\text{hyp}}{\text{adj}} = \frac{2x}{-x\sqrt{3}} \\ &= -\frac{2}{\sqrt{3}} \end{aligned}$$

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

- 12) Graph  $(-9, 40)$ .  
 Write the six trigonometric ratios for this point.  $(9, 40, 41)$



$$\sin \theta = \frac{40}{41}$$

$$\cos \theta = \frac{-9}{41}$$

$$\tan \theta = \frac{40}{-9}$$

$$\csc \theta = \frac{41}{40}$$

$$\sec \theta = \frac{41}{-9}$$

$$\cot \theta = \frac{-9}{40}$$