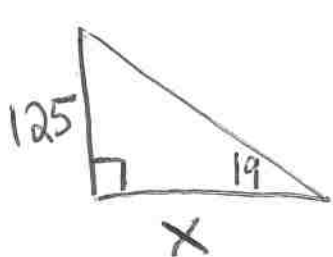


Accel Pre-Calc Unit 1 Intro to Trig Morning Review

Key

1) (Calculator)

A fire is spotted from the top of a 125-foot tall fire tower. If the angle of depression to the fire is 19° , how far is the fire from the base of the tower?



$$\tan 19 = \frac{125}{x}$$

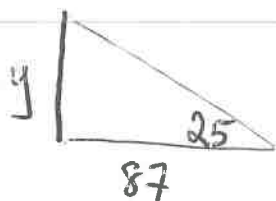
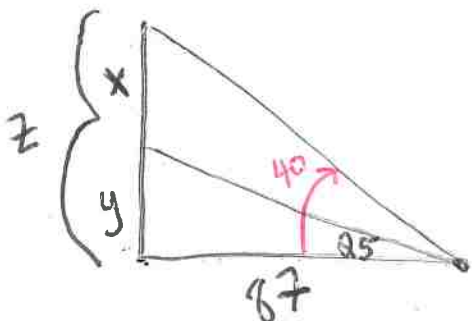
$$x \tan 19 = 125$$

$$x = \frac{125}{\tan 19}$$

$$x = 363.026 \text{ feet}$$

2) (calculator)

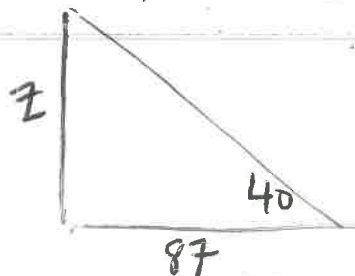
A radio station tower was built in two sections. From a point 87 feet from the base of the tower, the angle of elevation of the top of the first section is 25° , and the angle of elevation of the top of the second section is 40° . To the *nearest foot*, what is the height of the top section of the tower?



$$\tan 25 = \frac{y}{87}$$

$$y = 87 \tan 25$$

$$y = 40.569$$



$$\tan 40 = \frac{z}{87}$$

$$z = 87 \tan 40$$

$$z = 73.002$$

$$x = z - y$$

$$x = 73.002 - 40.569$$

$$x = 32.432 \text{ feet}$$

$$x \approx 32 \text{ feet}$$

3) (calculator)

This is the first year Janis is playing softball. She has been practicing her batting. On her last swing the bat made an arc with a radius of 48 inches and swept through 255° of rotation. Assuming the arc is circular, what is the distance the tip of the bat travels to the nearest inch?

$$s = r\theta$$

$$r = 48$$

$$\theta = 255^\circ$$

$$s = \underline{\quad?}$$

$$\theta = 255 \cdot \frac{\pi}{180} \approx 4.4505 \text{ rad}$$

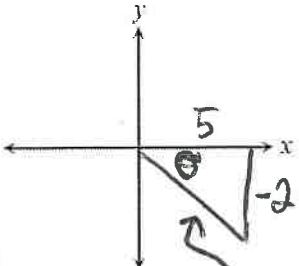
$$s = (48)(4.4505)$$

$$s = 213.624 \approx 214 \text{ inches}$$

4) (non-calculator)

Q4

17. $P(5, -2)$ is a point on the terminal side of θ in standard form. Find the exact values of the trigonometric functions of θ :



$(5)^2 + (-2)^2 = c^2$
 $25 + 4 = c^2$
 $29 = c^2$
 $c = \sqrt{29}$

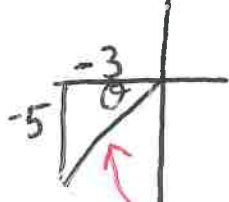
$\sin \theta = \frac{-2}{\sqrt{29}} = \frac{-2\sqrt{29}}{29}$	$\cos \theta = \frac{5}{\sqrt{29}} = \frac{5\sqrt{29}}{29}$	$\tan \theta = \frac{-2}{5}$
$\csc \theta = \frac{-\sqrt{29}}{2}$	$\sec \theta = \frac{\sqrt{29}}{5}$	$\cot \theta = \frac{-5}{2}$

5) Non-calculator

S/A
T/C

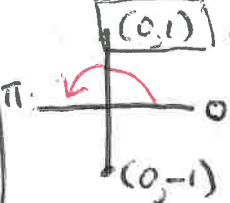
Use the given information to determine sine, cosine, and tangent of θ , unless already given.

a) $\tan \theta = \frac{5}{3}$; $\sin \theta < 0$.




$\sin \theta = \frac{-5}{\sqrt{34}} = \frac{-5\sqrt{34}}{34}$
 $\cos \theta = \frac{-3}{\sqrt{34}} = \frac{-3\sqrt{34}}{34}$
 $\tan \theta = \frac{5}{3}$
 $(-3)^2 + (-5)^2 = c^2$
 $9 + 25 = c^2 \rightarrow c = \sqrt{34}$

b) $\sec \theta = \text{undefined}$; $0 \leq \theta \leq \pi$.



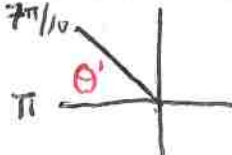
$\sin \theta = 1$
 $\cos \theta = 0$
 $\tan \theta = \frac{1}{0} \rightarrow \text{undefined}$

c) $\sin \theta = 0$; $\sec \theta = 1$.



$\sin \theta = 0$
 $\cos \theta = 1$
 $\tan \theta = \frac{0}{1} = 0$

6) Name the reference angle to $\frac{7\pi}{10}$.



$\theta' = \pi - \frac{7\pi}{10}$
 $\theta' = \frac{10\pi}{10} - \frac{7\pi}{10}$

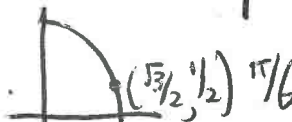
$\theta' = \frac{3\pi}{10} \text{ rad}$

S/A
T/C

Find all solutions for θ on the given interval. (no calculator)

7. $\cot \theta = -\sqrt{3}$, $0^\circ \leq \theta \leq 360^\circ$

$150^\circ, 330^\circ$



$\cot \theta \rightarrow \frac{x}{y} \rightarrow Q2, Q4$

Evaluate. (no calculator)

9. $\cos \frac{-13\pi}{4} = \frac{-\sqrt{2}}{2}$

$\frac{-13\pi}{4} + 2\pi \quad \cos\left(\frac{3\pi}{4}\right) = \frac{-\sqrt{2}}{2}$

$\frac{-13\pi}{4} + \frac{8\pi}{4} = \frac{-5\pi}{4} + \frac{8\pi}{4} = \frac{3\pi}{4}$

8. $\cos \theta = \text{undefined}$, $0 \leq \theta \leq 2\pi$

$\theta = 0, \pi, 2\pi$

10. $\tan 540^\circ = 0$

$\frac{540}{-360} \left| \tan(180^\circ) = \frac{0}{-1} \right.$
 $= 0$

11. $\cot \frac{19\pi}{6} = \sqrt{3}$

$\frac{19\pi}{6} - \frac{12\pi}{6} = \frac{7\pi}{6} \quad \left(\frac{-\sqrt{3}}{2}, \frac{-1}{2} \right)$
 $\frac{-\sqrt{3}}{-1} = \sqrt{3}$