

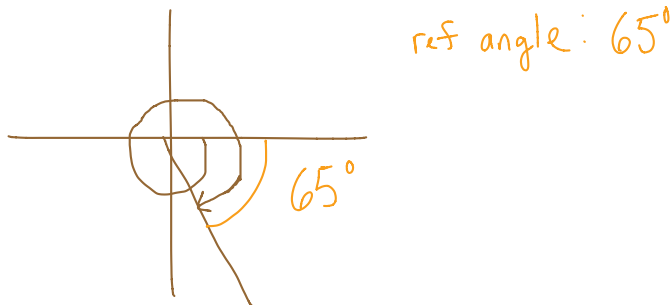
Chapter 1 Standards

1a	Use the Pythagorean Theorem to find missing sides in a right triangle
1b	Use the sine, cosine, and tangent functions to find missing sides in a right triangle
1c	Use the inverse sine, cosine, and tangent functions to find missing angles in a right triangle
1d	Apply Standards 1a, 1b, and 1c to solve mathematical models involving right triangles (<i>real-world problems</i>)
1e	Find missing sides and angles of an oblique triangle using the Law of Cosines
1f	Find missing sides of an oblique triangle using the Law of Sines
1g	Use the Laws of Cosines and Sines to solve mathematical models involving triangles (<i>real world problems</i>).

Chapter 2 Standards

2a	Draw angles that are negative or are larger than 180° .
2b	Find the quadrant and reference angles of a given angle in standard position.
2c	Given a point or the quadrant of the terminal side of an angle, find the six exact trigonometric values.
2d	Convert between radians and degrees.
2e	Apply 30-60-90 and 45-45-90 triangle dimensions to the unit circle

1. Identify the quadrant and find the reference angle for θ whose measure is -425° .



2. Convert $-\frac{15\pi}{4}$ to degrees.

$$-\frac{15\pi}{4} \cdot \frac{180}{\pi} = -675^\circ$$

3. If $\csc \theta = -\frac{41}{9}$ and θ terminates in QIII, state the other 5 **exact** trig values. Show sketch and work below.

$$r = 41 \quad y = -9 \quad x = ? \Rightarrow x^2 + 81 = 1681$$

$$x^2 = 1600$$

$$x = \pm 40 \quad \text{QIII means } x = -40$$

$$\begin{aligned}\sin \theta &= -\frac{9}{41} & \cos \theta &= -\frac{40}{41} & \tan \theta &= \frac{9}{40} \\ \csc \theta &= -\frac{41}{9} & \sec \theta &= -\frac{41}{40} & \cot \theta &= \frac{40}{9}\end{aligned}$$

	0°	30°	45°	60°	90°
θ^{rad}	0^{rad}				
$\sin \theta$		$\frac{1}{2}$		$\frac{\sqrt{3}}{2}$	
$\cos \theta$		$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$		

4. Using the special angles shown in the table above, find the reference angle for θ in #2 and use it to find the sine, cosine, and tangent of θ . Express your reference angle answer in radians.

$$\text{ref } \theta = \frac{\pi}{4} \quad \sin\left(-\frac{15\pi}{4}\right) = -\frac{\sqrt{2}}{2} \quad \cos\left(-\frac{15\pi}{4}\right) = -\frac{\sqrt{2}}{2}$$

$$-\frac{15\pi}{4} \text{ is in QII} \quad \tan\left(-\frac{15\pi}{4}\right) = -1$$

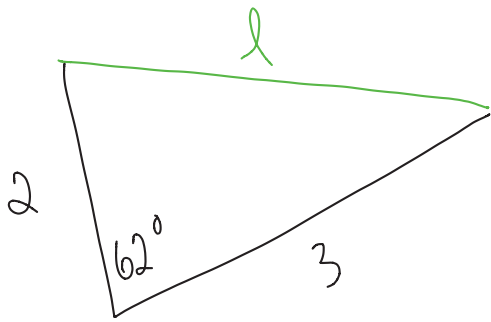
5. Find the two (radian) values for $0 < \theta < 2\pi$ and for which $\sin \theta = -\frac{1}{2}$

$$\theta = \frac{7\pi}{6}, \frac{11\pi}{6}$$

6. Using your calculator, find all possible degree values for which $\sec \theta = -1.192363293$

$$\theta = \pm 147^\circ \pm 360n \quad \begin{cases} \theta = 147^\circ \pm 360n \text{ (QII)} \\ \theta = 213^\circ \pm 360n \text{ QIII} \end{cases}$$

7. Given $\triangle KLM$, in which $k = 2$, $m = 3$, and $m\angle L = 62^\circ$, find l .

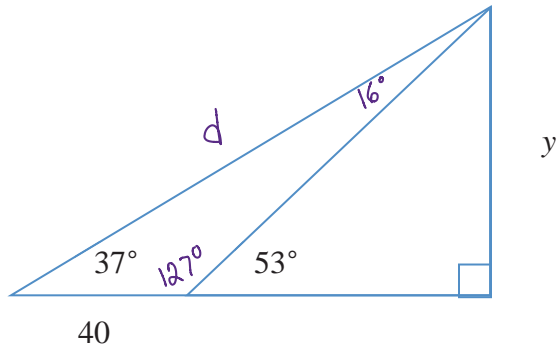


SAS \Rightarrow Law of Cosines

$$x^2 = 2^2 + 3^2 - 2(2)(3)\cos 62^\circ = 10.18317062$$

$$x = 3.191$$

8.



$$\frac{d}{\sin 127} = \frac{40}{\sin 16}$$

$$\sin 37 = \frac{y}{d}$$

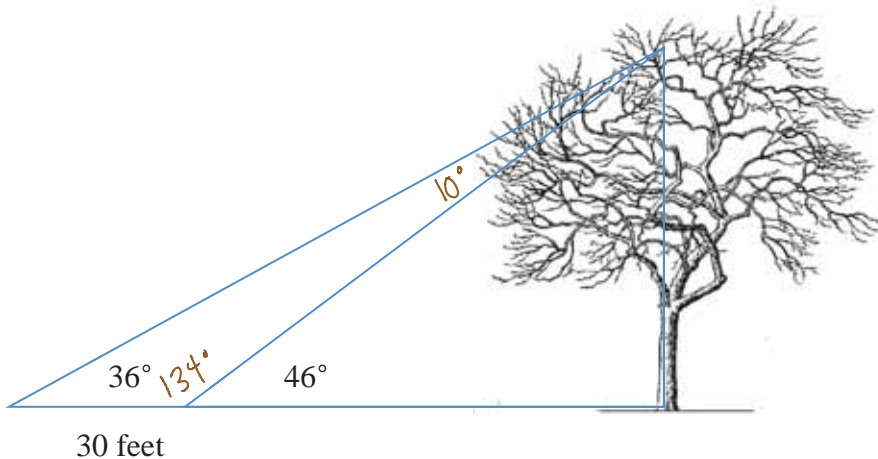
$$d \sin 37 = y$$

$$d \sin 16 = 40 \sin 127$$

$$d = \frac{40 \sin 127}{\sin 16} \approx 115.897$$

$$y = 69.748$$

9) Find the height of the tree



$$\frac{d}{\sin 134} = \frac{30}{\sin 10}$$

$$\sin 36 = \frac{y}{d}$$

$$d \sin 36 = y$$

$$d \sin 10 = 30 \sin 134$$

$$d = \frac{30 \sin 134}{\sin 10} \approx 124.275 \text{ ft}$$

$$y = 73.047 \text{ ft}$$

10) Given $\triangle PDQ$, in which $\angle Q = 58^\circ$, $\angle P = 82^\circ$, $d = 25$, find $p, q, \angle D$

$$\angle D = 40^\circ$$

$$\frac{25}{\sin 40^\circ} = \frac{q}{\sin 58^\circ}$$

$$\frac{25}{\sin 40^\circ} = \frac{p}{\sin 82^\circ}$$

$$q \sin 40^\circ = 25 \sin 58^\circ$$

$$p \sin 40^\circ = 25 \sin 82^\circ$$

$$q = \frac{25 \sin 58^\circ}{\sin 40^\circ}$$

$$p = \frac{25 \sin 82^\circ}{\sin 40^\circ}$$

$$q \approx 32.983$$

$$p \approx 38.515$$