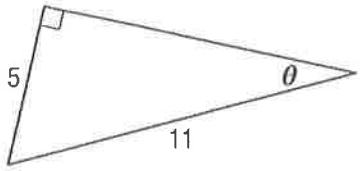
Name/Per: KEY

Algebra 2 Ch. 12 Review

12-1: I can solve for missing sides and angles in right triangles using right triangle trigonometry (SOHCAHTOA).

Round answers to the nearest hundredth.

1. Find all 3 of the values of the trigonometric functions for θ.



$\sin\theta = \frac{5}{11}$

$\cos\theta = \frac{9.8}{11}$

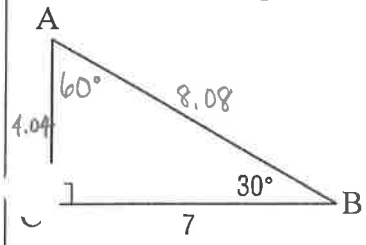
$\tan\theta = \frac{5}{9.8}$

In a right triangle $\angle B$ is acute. Find all of the remaining trigonometric functions given the following.

2. $\tan B = 2$ $\sin B = \frac{2}{2.34}$ $\cos B = \frac{1}{2.34}$

3. $\sin B = \frac{8}{15}$ $\cos B = \frac{12.7}{15}$ $\tan B = \frac{8}{12.7}$

4. Solve the triangle for all missing measurements.

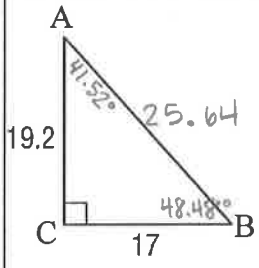


$A = 60°$

$b = 4.04$

$c = 8.08$

5. Solve the triangle for all missing measurements.

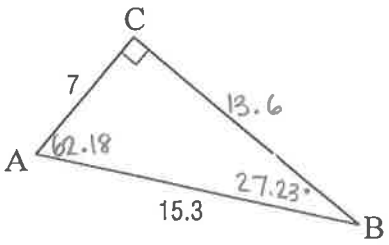


$A = 41.52°$

$B = 48.48°$

$c = 25.64$

6. Solve the triangle for all missing measurements.



$A = 62.18°$

$B = 27.23°$

$c = 13.6$

7. **SURVEYING** John stands 150 meters from a water tower and sights the top at an angle of elevation of 36°.
If John's eyes are 2 meters above the ground, how tall is the tower? Round to the nearest meter.

111 m

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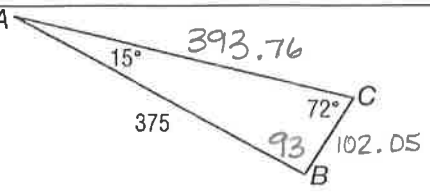
T12-2: I can solve for missing sides and angles in triangles using Law of Cosines and Law of Sines.

Find all the missing parts of each triangle using appropriate methods. Show your work and label the final answer on each triangle.

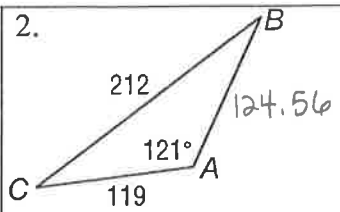
Round answers to the nearest hundredth.

1.



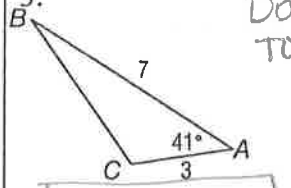
a = 102.05
B = 93°
b = 393.76

2.



B = 28.76°
C = 30.24°
c = 124.56

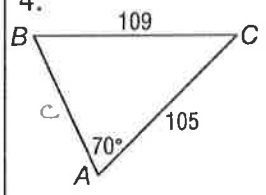
3.



DONT USE Law of Sines TO Find obtuse angles! Find the acute ones 1st!

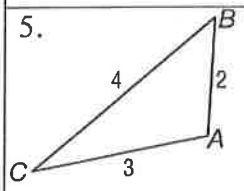
B = 22.56°
C = 116.44°
a = 5.13

4.



B = 64.85°
C = 45.15°
c = 82.24

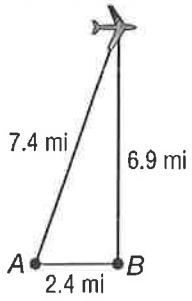
5.



A = 104.48°
B = 46.57°
C = 28.95°

6. **SATELLITES** Two radar stations are 2.4 miles apart are tracking an airplane. The straight-line distance between Station *A* and the plane is 7.4 miles. The straight-line distance between Station *B* and the plane is 6.9 miles. What is the angle of elevation from Station *A* to the plane? Round to the nearest degree.

The angle of elevation is 68.69°.



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<u>T12-3:</u> I can draw and find angles in standard position and convert between degrees and radian measures.

For all problems draw each angle in standard position. Convert each angle to either degrees or radians. Find a positive and negative angle that is co terminal to the given and find the reference angle.

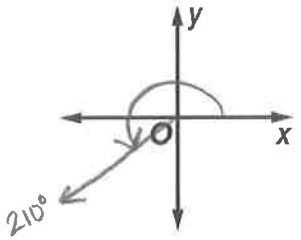
1. 210° $210 \cdot \frac{\pi}{180}$

Radians: $\frac{7\pi}{6}$

(+) Angle: 570°

(-) Angle: -150°

Reference Angle: 30°



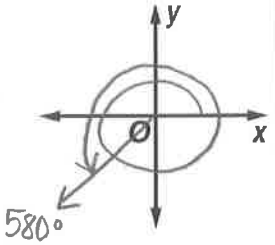
2. 580°

Radians: $29\pi/9$

(+) Angle: 940° or 220°

(-) Angle: -180°

Reference Angle: 40°



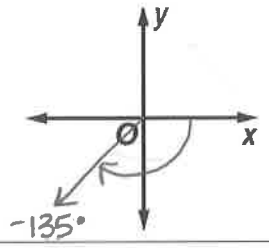
3. -135°

Radians: $\frac{-3\pi}{4}$

(+) Angle: 225°

(-) Angle: -495°

Reference Angle: 45°



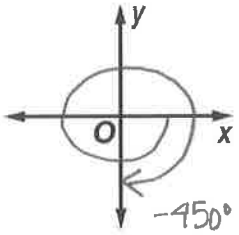
4. –450°

Radians: $\frac{5\pi}{2}$

(+) Angle: 270°

(-) Angle: -90°, -810°

Reference Angle: 90°



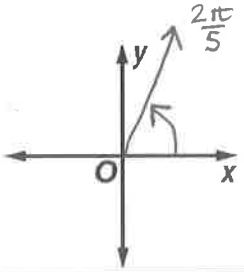
5. $\frac{2\pi}{5}$ $2\pi \cdot \frac{5}{5} = \frac{10\pi}{5}$

Degrees: 72°

(+) Angle: $\frac{12\pi}{5}$

(-) Angle: $\frac{-8\pi}{5}$

Reference Angle: $2\pi/5$



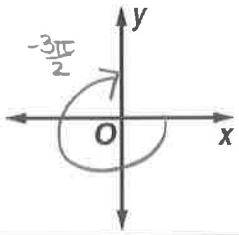
6. $-\frac{3\pi}{2}$ $2\pi \cdot \frac{2}{2} = \frac{4\pi}{2}$

Degrees: -270°

(+) Angle: $\frac{\pi}{2}$

(-) Angle: $\frac{-7\pi}{2}$

Reference Angle: $\pi/2$



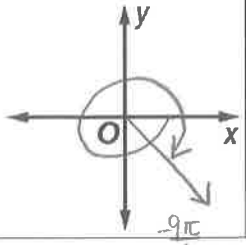
7. $-\frac{9\pi}{4}$ $2\pi \cdot \frac{4}{4}$ $\frac{8\pi}{4}$

Degrees: -405°

(+) Angle: $\frac{7\pi}{4}$

(-) Angle: $\frac{-\pi}{4}$ or $\frac{-17\pi}{4}$

Reference Angle: $\pi/4$



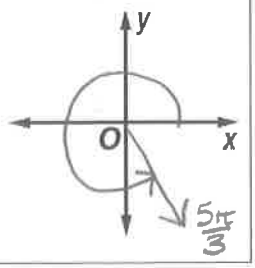
8. $\frac{5\pi}{3}$ $2\pi \cdot \frac{3}{3} = \frac{6\pi}{3}$

Degrees: 300°

(+) Angle: $\frac{11\pi}{3}$

(-) Angle: $\frac{-\pi}{3}$

Reference Angle: $\frac{\pi}{3}$



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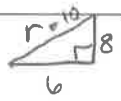
T12-4: I can find values of trigonometric functions of general angles.

For problems 1-8, find the exact values of the six trigonometric functions at θ that contain the given points. *Round answers to the nearest hundredth.*

SOHCAHTOA

1. (6, 8)

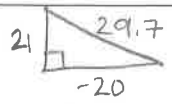


$\sin\theta = \frac{8}{10} = \frac{4}{5}$ $\quad \csc\theta = \frac{10}{8} = \frac{5}{4}$

$\cos\theta = \frac{6}{10} = \frac{3}{5}$ $\quad \sec\theta = \frac{10}{6} = \frac{5}{3}$

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

2. (–20, 21)



$\sin\theta = \frac{21}{29.7}$ $\quad \csc\theta = \frac{29.7}{21}$

$\cos\theta = \frac{-20}{29.7}$ $\quad \sec\theta = \frac{29.7}{-20}$

$\tan\theta = \frac{21}{-20}$ $\quad \cot\theta = \frac{-20}{21}$

3. (5, 0) $x=5 \quad y=0 \quad r=5$

$\sin\theta = \frac{O}{H} = \frac{0}{5} = 0$ $\quad \csc\theta = \frac{5}{0} = \text{und}$

$\cos\theta = \frac{5}{5} = 1$ $\quad \sec\theta = 1$

$\tan\theta = \frac{0}{5} = 0$ $\quad \cot\theta = \text{und.}$

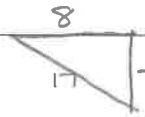
4. (–2, –5) $(-2)^2+(-5)^2 = r^2 \quad r=\sqrt{29} \approx 5.39$

$\sin\theta = \frac{-5}{5.39}$ $\quad \csc\theta = \frac{5.39}{-5}$

$\cos\theta = \frac{-2}{5.39}$ $\quad \sec\theta = \frac{5.39}{-2}$

$\tan\theta = \frac{-5}{-2} = \frac{5}{2}$ $\quad \cot\theta = \frac{2}{5}$

5. (8, –15)



$64+225=r^2 \quad r=17$

$\sin\theta = \frac{-15}{17}$ $\quad \csc\theta = \frac{17}{-15}$

$\cos\theta = \frac{8}{17}$ $\quad \sec\theta = \frac{17}{8}$

$\tan\theta = \frac{-15}{8}$ $\quad \cot\theta = \frac{8}{-15}$

6. (0, –40) $x=0 \quad y=-40 \quad r=-40$

$\sin\theta = \frac{O}{H} = \frac{-40}{-40} = 1$ $\quad \csc\theta = 1$

$\cos\theta = \frac{A}{H} = \frac{0}{-40} = 0$ $\quad \sec\theta = \text{und.}$

$\tan\theta = \frac{-40}{0} = \text{und}$ $\quad \cot\theta = 0$

7. (-3, 0)

$\sin\theta = 0$ $\quad \csc\theta = \text{und.}$

$\cos\theta = 1$ $\quad \sec\theta = 1$

$\tan\theta = 0$ $\quad \cot\theta = \text{und.}$

8. (0, 12)

$\sin\theta = 1$ $\quad \csc\theta = 1$

$\cos\theta = 0$ $\quad \sec\theta = \text{und.}$

$\tan\theta = \text{und}$ $\quad \cot\theta = 0$