

Algebra 2

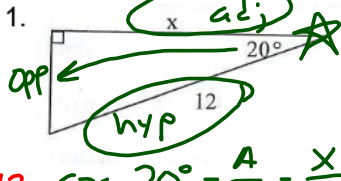
Trig Test Review Guide

Name:

Hour:

Level 1:

Find the measure of x.

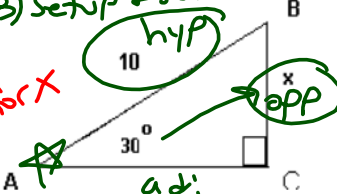


Given 2 sides 1 angle use trig

$12 \cdot \cos 20^\circ = \frac{A}{H} = \frac{x}{12}$

$12 \cos 20^\circ = x$
 Type into calculator $11.28 = x$

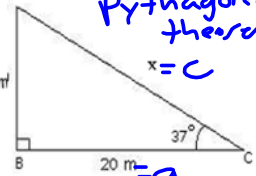
- 1) Label
- 2) Pick trig function
- 3) Setup + solve



$10 \cdot \sin 30^\circ = \frac{O}{H} = \frac{x}{10}$

$10 \sin 30^\circ = x$
 $5 = x$

Given: 3 sides Pythagorean theorem

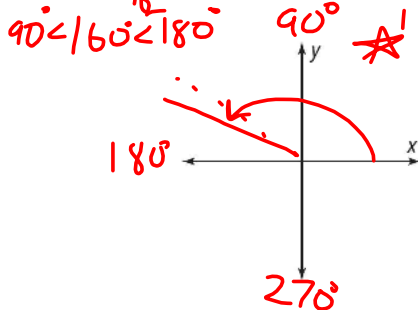


$a^2 + b^2 = c^2$
 $12^2 + 20^2 = c^2$
 $144 + 400 = c^2$
 $544 = c^2$
 $\sqrt{544} = \sqrt{c^2}$

6. Use the unit circle to calculate

$\sin\left(\frac{7\pi}{6}\right) = -\frac{1}{2}$
 Find $\frac{7\pi}{6}$ write y value
 $\cos(315^\circ) = \frac{\sqrt{2}}{2}$
 Find 315° write x value

4. Sketch the angle 160° :

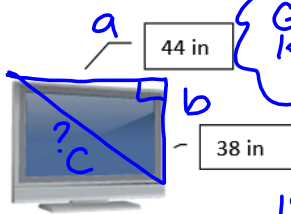


5. Convert each of the following:

$\frac{4\pi}{3}$ radians = 240° degrees
 look at unit circle
 135 degrees = $\frac{3\pi}{4}$ radians

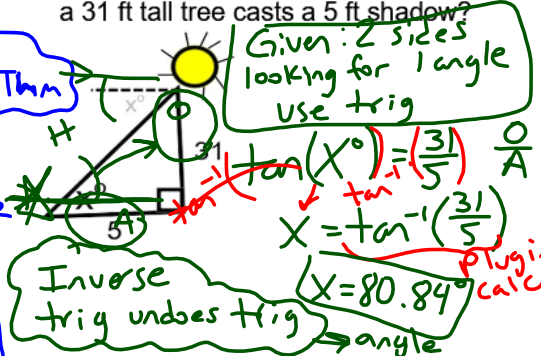
Level 2:

7. What is the diagonal measurement of the TV screen shown in the figure below?



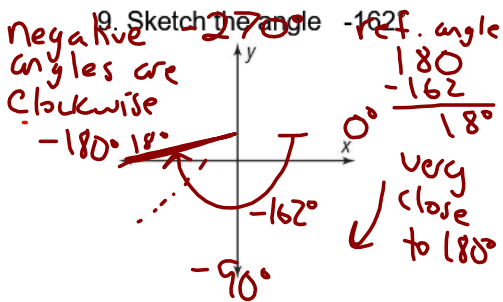
Given 2 sides looking for 3rd side use Pythagorean Thm
 $a^2 + b^2 = c^2$
 $44^2 + 38^2 = c^2$
 $1936 + 1444 = c^2$
 $3380 = c^2$
 $\sqrt{3380} = \sqrt{c^2}$
 $58.14 \text{ in} = c$

8. At what angle is the sun, if a 31 ft tall tree casts a 5 ft shadow?



Given: 2 sides looking for 1 angle use trig
 $\tan(x^\circ) = \left(\frac{31}{5}\right)$
 $x = \tan^{-1}\left(\frac{31}{5}\right)$
 $x = 80.84^\circ$ angle

9. Sketch the angle -162° .



10. Convert each of the following:

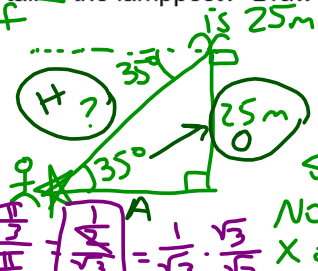
$\frac{8\pi}{9}$ radians = 160° degrees
 $\frac{8\pi}{9} \cdot \frac{180}{\pi} = \frac{8 \cdot 180}{9} = 160^\circ$
 need to cancel π
 390 degrees = $\frac{13\pi}{6}$ radians
 $\frac{390}{1} \cdot \frac{\pi}{180} = \frac{390\pi}{180} = \frac{13\pi}{6}$
 need to cancel degrees diagonally no decimals must reduce

11. Use the unit circle

$\sin(-225^\circ)$
 $\sin(-225 + 360)$
 $\sin(135^\circ)$
 "went to 225 and reflected"

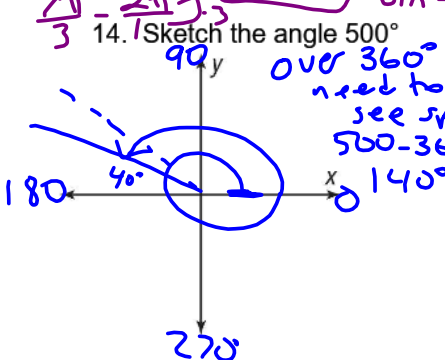
Level 3:

12. A bird sits on top of a lamppost. The angle of depression from the bird to the feet of an observer standing away from the lamppost is 35° . The distance from the bird to the observer is 25 meters. How tall is the lamppost? Draw the picture, label it, and solve.



Given: 1 side and angle
Looking For: Side
Use Trig
 $\sin(35^\circ) = \frac{25}{x}$
 $\rightarrow \csc(35^\circ) = \frac{x}{25}$
 $25 \cdot \csc(35^\circ) = x$
 $25 \cdot (\frac{1}{\sin(35^\circ)}) = x$
 $43.59 = x$
meters

13. Use the Unit circle to calculate $\cot(\frac{7\pi}{3}) = \frac{\sqrt{3}}{3}$
rationalize denominator
over 2π subtract $\frac{2\pi}{3}$
 $\cot(\frac{7\pi}{3} - \frac{6\pi}{3}) = \cot(\frac{\pi}{3}) = \frac{\cos \frac{\pi}{3}}{\sin \frac{\pi}{3}} = \frac{1}{\frac{\sqrt{3}}{2}} = \frac{2}{\sqrt{3}} = \frac{2\sqrt{3}}{3}$

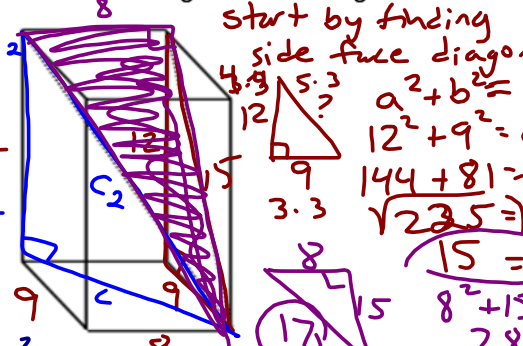


14. Sketch the angle 500°
over 360° need to see spiral
 $500 - 360 = 140^\circ$
15. Find the Arc Length
angle must be in radians
 $S = r\theta$
 $S = 100(75 \cdot \frac{\pi}{180})$
 $S = 130.89 \text{ yd}$

16. $\cos \theta = \frac{14}{50}$
 $14^2 + b^2 = 50^2$
 $b = 48$
 $\sec \theta = \frac{H}{A} = \frac{50}{14}$
 $\sin \theta = \frac{O}{H} = \frac{48}{50}$
 $\csc \theta = \frac{H}{O} = \frac{50}{48}$
 $\tan \theta = \frac{O}{A} = \frac{48}{14}$
 $\cot \theta = \frac{A}{O} = \frac{14}{48}$

Level 4:

17. The front length is 8 ft, the side width is 9 ft, and the height is 12 ft. What is the length of the 2 diagonals drawn?



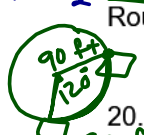
$12^2 + 8^2 = c^2$
 $145 = c^2$
 $12.04 = c$

start by finding side face diagonal
 $12^2 + 9^2 = c^2$
 $144 + 81 = c^2$
 $225 = c^2$
 $15 = c$

18. The length of the hypotenuse in a $30^\circ-60^\circ-90^\circ$ triangle is 26. What are the sine and secant ratios for the 30° angle?

opp 13 hyp 26
adj $13\sqrt{3}$
 $\sin 30^\circ = \frac{13}{26} = \frac{1}{2}$
 $\sec 30^\circ = \frac{H}{A} = \frac{26}{13\sqrt{3}} = \frac{2\sqrt{3}}{3}$

19. A much newer and improved Ferris wheel rotates 120° prior to making a stop. The diameter of the Ferris wheel is 180 ft. How far around did the Ferris wheel travel? Round to the nearest whole foot.



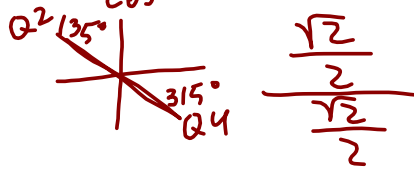
$S = \theta r$
 $S = 120 \cdot (\frac{\pi}{180}) \cdot 90 \text{ ft} = 188.5 \text{ ft}$

domain restricted for Tangent to $Q1$ and $Q4$

20. Use the Unit Circle to calculate:
 $\cos^{-1}(-\frac{\sqrt{3}}{2}) = 210^\circ + 360k$
What angle has a cosine value (x coordinate) of $-\frac{\sqrt{3}}{2}$?

What angle has a sine value of $-\frac{\sqrt{2}}{2}$?

$\cos(150^\circ) = -\frac{\sqrt{3}}{2}$



Must convert degrees to radians
Must multiply by radius not diameter