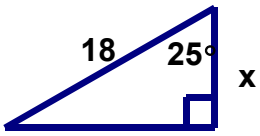
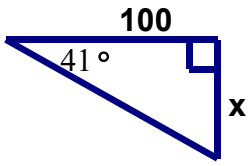
Algebra 2 Trig H **Name:**
Review for Quiz 6.1-6.4

1. Write a trig. equation and then solve for **x** to the nearest hundredth.



equation: $\cos 25^\circ = \frac{x}{18}$

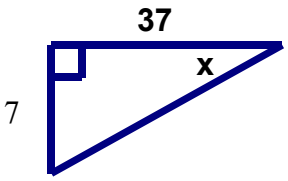
$x = 16.31$



equation: $\tan 41^\circ = \frac{x}{100}$

$x = 100\tan 41^\circ$

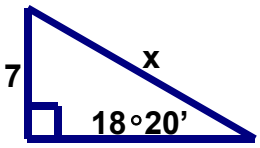
$= 86.93$



equation: $\tan x = \frac{7}{37}$

$x = \tan^{-1}\left(\frac{7}{37}\right)$

$= 10.71^\circ$

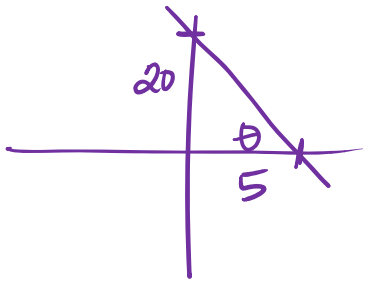


equation: $\sin(18^\circ 20') = \frac{7}{x}$

$x = \frac{7}{\sin(18^\circ 20')}$

$= 22.25$

2. Find the measure of the acute angle between the line y = -4x + 20 and the x axis and round to the nearest hundredth.



$\theta = \tan^{-1}\left(\frac{20}{5}\right)$

$= 75.96^\circ$

3. Change the angle, 24°17'34", to degrees only.

$\frac{34}{60} = \frac{17}{30} \rightarrow 17\frac{17}{30} = \frac{527}{30}$

$\frac{527}{30} \cdot \frac{1}{60} = \frac{527}{1800}$

$24\frac{527}{1800}^\circ$

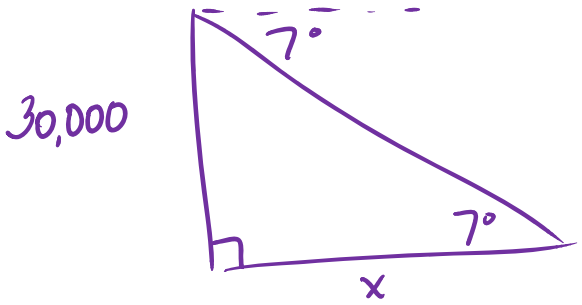
4. Change the angle, 36.336° to degrees, min, & sec.

$0.336 \cdot 60 = 20.16$

$0.16 \cdot 60 = 9.6 \uparrow 10$

$36^\circ 20' 10''$

5. From a plane flying 30,000 feet above the ground, a small town is spotted at an angle of depression of 7°. How far is the town from the spot on the ground directly below the plane? Round to the nearest hundredth.



$\tan 7^\circ = \frac{30{,}000}{x}$

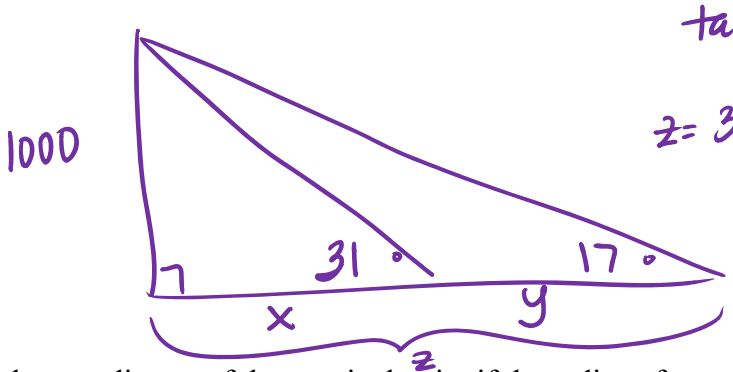
$x = \frac{30{,}000}{\tan 7^\circ} = 244{,}330.39$ feet

6. An observer on a cliff 1000 m above sea level sights two ships due east. The angles of depression of the ships are 31° and 17°. Find, to the nearest meter, the distance between the two ships. Round to the nearest hundredth.

$\tan 31° = \frac{1000}{x}$ $\tan 17° = \frac{1000}{z}$

$x = 1664.28$

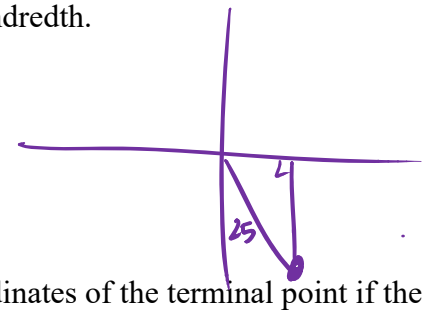
$z = 3270.85$



$y = z - x$

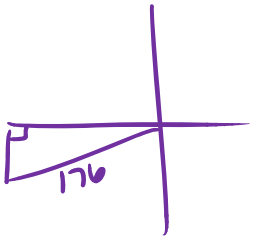
$= 1606.57$

7. Find the coordinates of the terminal point if the radius of rotation is 25 and the rotation angle is 281°. Round to the nearest hundredth.



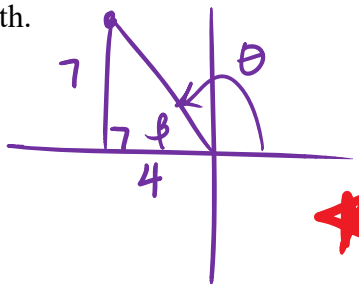
$(4.77, -24.54)$

8. Find the coordinates of the terminal point if the radius of rotation is 176 and the rotation angle is 192°. Round to the nearest hundredth.



$(-172.15, -36.59)$

9. Find the radius of rotation and the rotation angle for a terminal point of (-4, 7). Round to the nearest hundredth.



$\beta = \tan^{-1}(7/4)$

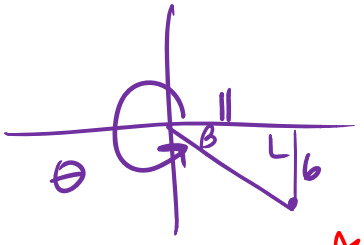
$= 60.26°$

$\theta = 119.74°$

$r = \sqrt{65}$

$= 8.06$

10. Find the radius of rotation and the rotation angle for a terminal point of (11, -6). Round to the nearest hundredth.



$\beta = \tan^{-1}(\frac{6}{11})$

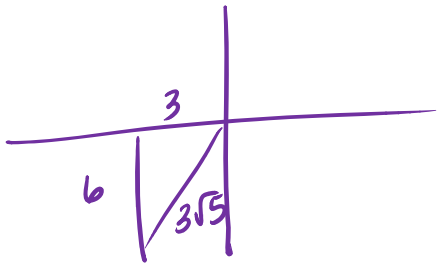
$= 28.61°$

$\theta = 331.39°$

$r = \sqrt{157}$

$= 12.53$

11. Write the six trigonometric ratios for the terminal point (-3, -6).

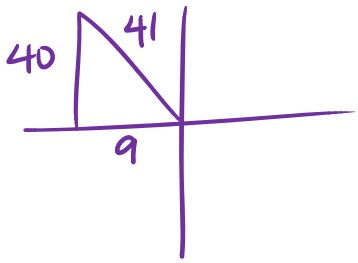


$\sin\theta = \frac{-6}{3\sqrt{5}} = \frac{-2\sqrt{5}}{5}$ $\quad \csc\theta = -\frac{\sqrt{5}}{2}$

$\cos\theta = \frac{-3}{3\sqrt{5}} = -\frac{\sqrt{5}}{5}$ $\quad \sec\theta = -\sqrt{5}$

$\tan\theta = 2$ $\quad \cot\theta = \frac{1}{2}$

12. If $\cos\theta = -\frac{9}{41}$ and $\sin\theta > 0$, write the other five trigonometric ratios for θ.



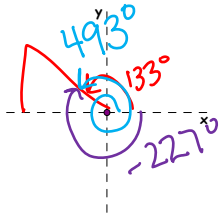
$\sin\theta = \frac{40}{41}$ $\quad \csc\theta = \frac{41}{40}$

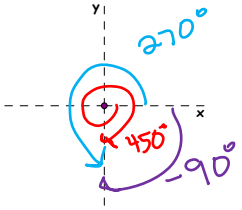
$\sec\theta = -\frac{41}{9}$

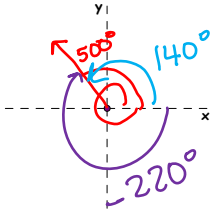
$\tan\theta = -\frac{40}{9}$ $\quad \cot\theta = -\frac{9}{40}$

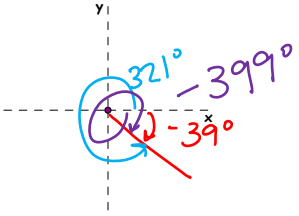
13. Find a positive and negative angle that is co-terminal with the given angle. Draw a picture.

a. 133° b. -450° c. 500° d. -39°







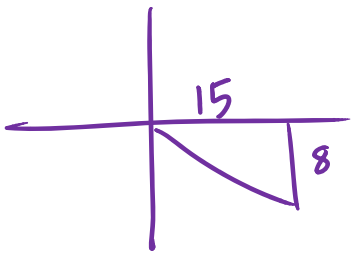


(there could be others!)

14. Find θ if it is coterminal with 440° and $-360° \le \theta \le 360°$.

$\theta = 80°$ OR $-280°$

15. If $\tan\theta = -\frac{8}{15}$ and $\cos\theta > 0$, find a measure of rotation for θ. Round to the nearest hundredth.



$\beta = \tan^{-1}\left(\frac{8}{15}\right)$

$= 28.07°$

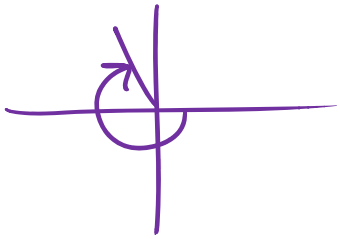
$\theta = 331.93°$

16. Find two positive and two negative coterminal angles with 150°.

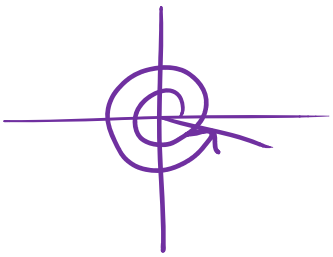
510°, 870°, -210°, -570°

17. Draw an angle measure of …

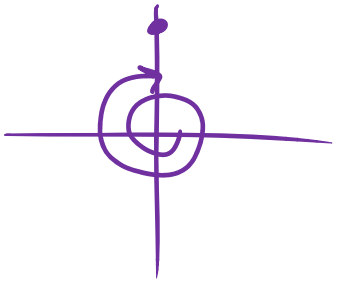
a. -240°



b. 700°

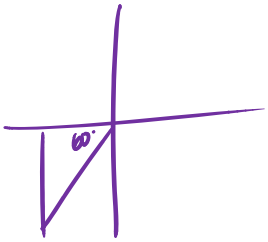


c. -630°

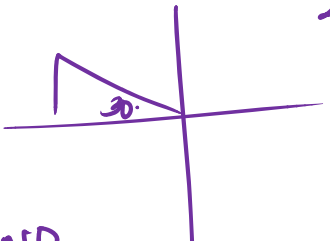


18. Evaluate:

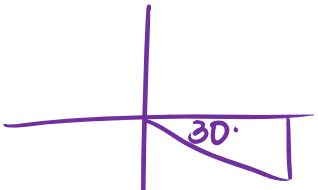
a. $\cos 240° = -\frac{1}{2}$



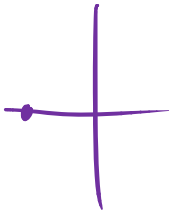
b. $\sin 150° = \frac{1}{2}$



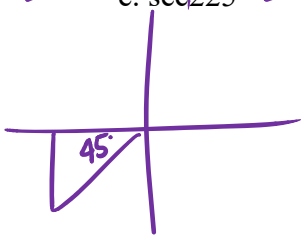
c. $\tan 330° = \frac{-\frac{1}{2}}{\frac{\sqrt{3}}{2}} = -\frac{1}{\sqrt{3}} = -\frac{\sqrt{3}}{3}$



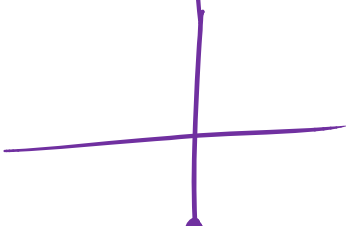
d. $\csc 180° = \frac{1}{0} = \text{UND}$



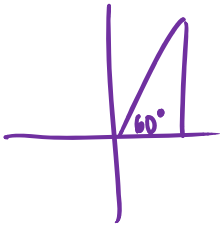
e. $\sec 225° = \frac{-2}{\sqrt{2}} = -\sqrt{2}$



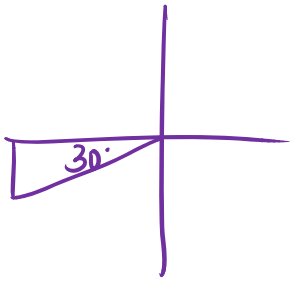
f. $\cot 270° = \frac{0}{-1} = 0$



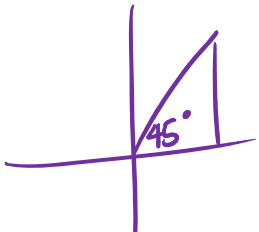
g. $\sin 420° = \frac{\sqrt{3}}{2}$



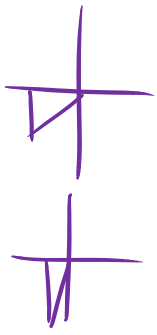
h. $\cos(-150°) = -\frac{\sqrt{3}}{2}$



i. $\tan(-315)° = 1$



19. 6(sin225°)(cos 240°)



$= 6 \cdot -\frac{\sqrt{2}}{2} \cdot -\frac{1}{2}$

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

20. (sin45°)(cos 45°) – (cos30°)(sin60°)

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

$= \frac{2}{4} - \frac{3}{4}$

$= -\frac{1}{4}$