

Homework 7-7

1. $\frac{7}{6}$

2. $\frac{4}{9}$

3. $\frac{4}{13}$

4. $\frac{11}{12}$

5. $\frac{1}{4}$

6. $\frac{1}{3}$

7. $\frac{1}{2}$

8. $(-x, -y)$

#9 - 12 see next slide

Name: Key
 Period: _____

Algebra 2 Homework 7-7

1. If $\cos(B) = 6/7$, then $\sec(B) = \underline{7/6}$

2. If $\csc(A) = 9/4$, then $\sin(A) = \underline{4/9}$

3. If $\tan(A) = 13/4$, then $\cot(A) = \underline{4/13}$

4. If $\csc(A) > 0$ and $\tan(A) < 0$, then angle A must be in quadrant II.
 $\sin + \quad \tan -$

5. If $\cos(A) > 0$ and $\csc(A) < 0$, then angle A must be in quadrant IV.
 $\cos + \quad \sin -$

6. If $\tan(A) > 0$ and $\csc(A) > 0$, then angle A must be in quadrant I.
 $\tan + \quad \sin +$

S	A
+	+
-	+
-	-

7. The terminal side of θ , an angle in standard position, intersects the unit circle at $P\left(-\frac{1}{3}, -\frac{\sqrt{8}}{3}\right)$.
 What is the value of $\sec(\theta)$? (Regents Question)

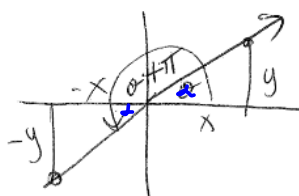
(1) -3
 (2) $-\frac{3\sqrt{8}}{8}$

(3) $-\frac{1}{3}$
 (4) $-\frac{\sqrt{8}}{3}$

$\cos(\theta) = -\frac{1}{3}$
 $\sec(\theta) = -3$

8. If $\angle \theta$ is in quadrant I and passes through the point (x, y) on the unit circle, what would be the coordinates of the points at angles $(\theta + \pi)$?

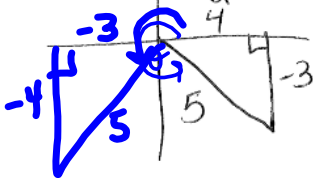
$\pi = 180^\circ$



$(-x, -y)$

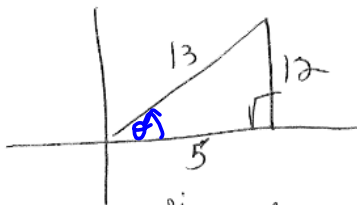
#9-11: For the following problems, draw a sketch and find all remaining trig values.

9. $\sin(\theta) = \frac{-3}{5}$ and $\sec(\theta) < 0$.



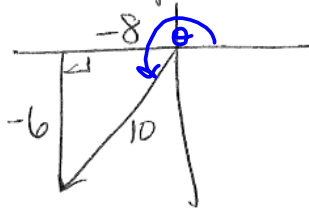
$$\begin{aligned}\sin(\theta) &= \frac{-3}{5} & \csc(\theta) &= \frac{5}{-3} \\ \cos(\theta) &= \frac{-4}{5} & \sec(\theta) &= \frac{-5}{4} \\ \tan(\theta) &= \frac{-3}{4} & \cot(\theta) &= \frac{4}{3}\end{aligned}$$

10. $\cos(\theta) = \frac{5}{13}$ and $\csc(\theta) > 0$.



$$\begin{aligned}\sin(\theta) &= \frac{12}{13} & \csc(\theta) &= \frac{13}{12} \\ \cos(\theta) &= \frac{5}{13} & \sec(\theta) &= \frac{13}{5} \\ \tan(\theta) &= \frac{12}{5} & \cot(\theta) &= \frac{5}{12}\end{aligned}$$

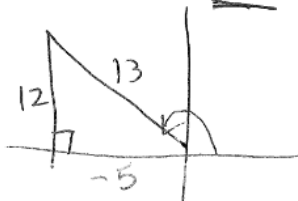
11. $\cos(\theta) = \frac{-8}{10}$ and $\tan(\theta) > 0$.



$$\begin{aligned}\sin(\theta) &= \frac{-6}{10} & \csc(\theta) &= \frac{-10}{6} \\ \cos(\theta) &= \frac{-8}{10} & \sec(\theta) &= \frac{-10}{8} \\ \tan(\theta) &= \frac{-6}{-8} & \cot(\theta) &= \frac{8}{6}\end{aligned}$$

12. Given $\sin(\theta) = \frac{12}{13}$ and θ is an obtuse angle less than π radians.

- Draw a sketch.
- Find the remaining trig values.
- Find θ in radians to the nearest tenth.



$$\begin{aligned}\sin(\theta) &= \frac{12}{13} & \csc(\theta) &= \frac{13}{12} \\ \cos(\theta) &= \frac{-5}{13} & \sec(\theta) &= \frac{-13}{5} \\ \tan(\theta) &= \frac{-12}{5} & \cot(\theta) &= \frac{-5}{12}\end{aligned}$$

$m\angle\theta =$

$\alpha = \sin^{-1}(12/13) = 1.2 \text{ rad}$

$\theta = \pi - 1.2 = 1.9 \text{ rad}$

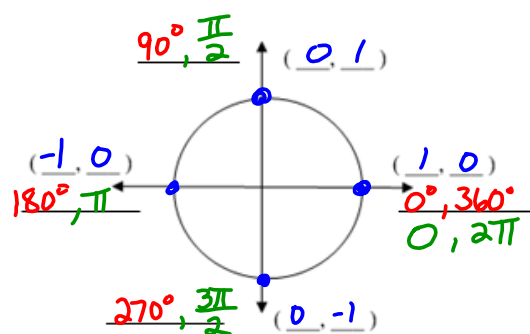
- *d. If $\pi \leq \theta < \frac{3\pi}{2}$, how does that change your answers?

signs change for part b

$\theta = \pi + 1.2 = 4.3 \text{ rad}$

Unit 7 Test Review

1. Label the coordinates and quadrantal angles (in degrees and radians) on the unit circle.



2. If $\sin(\theta) < 0$ and $\cos(\theta) > 0$, angle θ would be in what quadrant? _____
3. If $\tan(x) > 0$, then $\cot(x)$ is positive or negative? _____
4. If $\cos(\theta) = -0.4$ and $\csc(\theta) < 0$, then θ is in quadrant _____.
5. If $\csc(\theta) < 0$ and $\cot(\theta) > 0$, then θ is in quadrant _____.

6. If θ is an angle in standard position and its terminal side passes through the point

$\left(-\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right)$ on a unit circle:

a. What quadrant is the point in? II

b. $\sin(\theta) = \frac{\sqrt{2}}{2}$

c. $\cos(\theta) = -\frac{\sqrt{2}}{2}$

d. $\tan(\theta) = -1$

e. $m < \theta =$

$$\tan(\theta) = \frac{\sin(\theta)}{\cos(\theta)} = \frac{\frac{\sqrt{2}}{2}}{-\frac{\sqrt{2}}{2}} = -1$$

$$\alpha = \sin^{-1}\left(\frac{\sqrt{2}}{2}\right) = 45^\circ$$

$$\theta = 180 - 45 = 135^\circ = \frac{3\pi}{4}$$

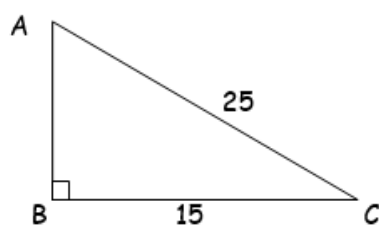


7. Find the third side and the value of each ratio as a fraction.

a. $\cos A = \underline{\hspace{1cm}}$ b. $\tan C = \underline{\hspace{1cm}}$

c. $\sin A = \underline{\hspace{1cm}}$ d. $\sec C = \underline{\hspace{1cm}}$

e. $\csc A = \underline{\hspace{1cm}}$ f. $\cot C = \underline{\hspace{1cm}}$

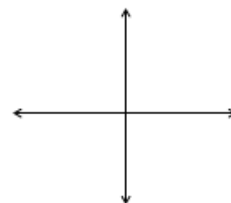


8. Express in degrees: $-\frac{9\pi}{5}$

9. Express in radians, as a fraction in terms of π : 250°

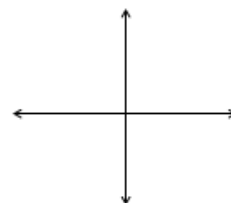
10. 300°

- a. Sketch the angle, indicating the direction of the rotation by an arrow.
- b. Find two coterminal angles....one positive and one negative.



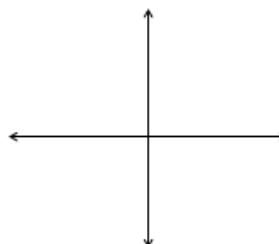
11. -150°

- a. Sketch the angle, indicating the direction of the rotation by an arrow.
- b. Find two coterminal angles....one positive and one negative.



12. If $\csc(\theta) = \frac{-17}{8}$ and $\cos(\theta) < 0$, find:

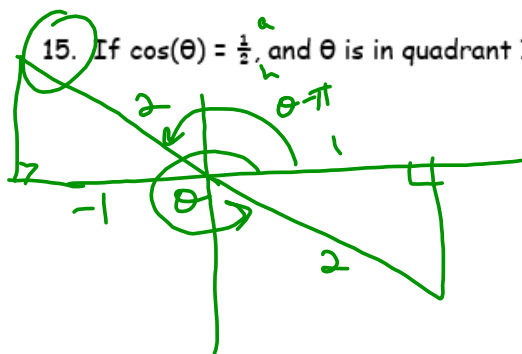
- Draw a diagram in the correct quadrant
- $\sin \theta =$
- $\cos \theta =$
- $\tan \theta =$
- $\sec \theta =$
- $\cot \theta =$



13. If $\sin(\theta) = -0.6$ and θ is in quadrant III, use the Pythagorean Identity to find $\cos(\theta)$.

14. If $g(x) = \cos(x) - \sin(x)$, what is $g\left(\frac{\pi}{2}\right)$?

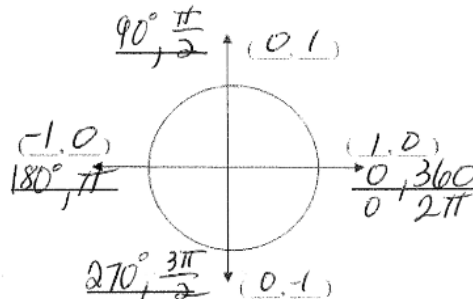
15. If $\cos(\theta) = \frac{1}{2}$, and θ is in quadrant IV, find $\cos(\theta - \pi)$.



$$\cos(\theta - \pi) = -\frac{1}{2}$$

Unit 7 Test Review

1. Label the coordinates and quadrantal angles (in degrees and radians) on the unit circle.



2. If $\sin(\theta) < 0$ and $\cos(\theta) > 0$, angle θ would be in what quadrant? IV
3. If $\tan(x) > 0$, then $\cot(x)$ is positive or negative? +
4. If $\cos(\theta) = -0.4$ and $\csc(\theta) < 0$, then θ is in quadrant III
5. If $\csc(\theta) < 0$ and $\cot(\theta) > 0$, then θ is in quadrant III
6. If θ is an angle in standard position and its terminal side passes through the point

$\left(-\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right)$ on a unit circle:

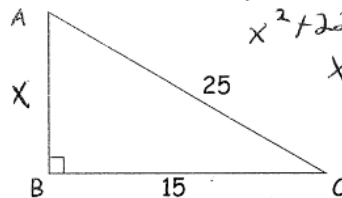
- a. What quadrant is the point in? II
- b. $\sin(\theta) = \frac{\sqrt{2}}{2}$
- c. $\cos(\theta) = -\frac{\sqrt{2}}{2}$
- d. $\tan(\theta) = \frac{-1}{1} \leftarrow \frac{\sqrt{2}/2}{-\sqrt{2}/2}$
- e. $m \angle \theta = 135^\circ$

$$\alpha = \sin^{-1}\left(\frac{\sqrt{2}}{2}\right) = 45^\circ$$

$$\theta = 180 - 45 = 135^\circ$$

7. Find the third side and the value of each ratio as a fraction.

- a. $\cos A = \frac{20}{25}$ b. $\tan C = \frac{20}{15}$
- c. $\sin A = \frac{15}{25}$ d. $\sec C = \frac{25}{15}$
- e. $\csc A = \frac{25}{15}$ f. $\cot C = \frac{15}{20}$



$$X^2 + 15^2 = 25^2$$

$$X^2 + 225 = 625$$

$$X^2 = 400$$

$$X = 20$$

TQ1

8. Express in degrees: $-\frac{9\pi}{5}\left(\frac{180}{\pi}\right) = -324^\circ$

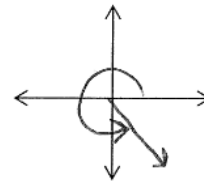
9. Express in radians, as a fraction in terms of π : $250^\circ\left(\frac{\pi}{180}\right) = \frac{25\pi}{18}$

10. 300°

- a. Sketch the angle, indicating the direction of the rotation by an arrow.
b. Find two coterminal angles....one positive and one negative.

$$300 - 360 = -60^\circ$$

$$300 + 360 = 660^\circ$$

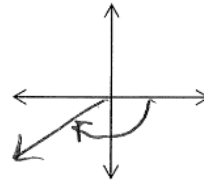


11. -150°

- a. Sketch the angle, indicating the direction of the rotation by an arrow.
b. Find two coterminal angles....one positive and one negative.

$$-150 + 360 = 210^\circ$$

$$-150 - 360 = -510^\circ$$



12. If $\csc(\theta) = \frac{-17}{8}$ and $\cos(\theta) < 0$, find: III

- a. Draw a diagram in the correct quadrant

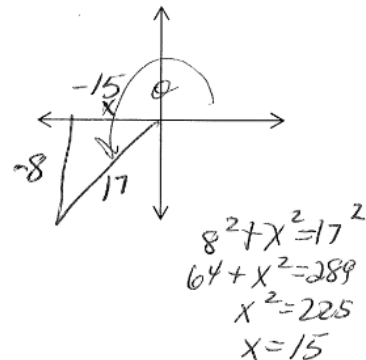
b. $\sin \theta = \frac{-8}{17}$

c. $\cos \theta = \frac{-15}{17}$

d. $\tan \theta = \frac{8}{15}$

e. $\sec \theta = \frac{-17}{15}$

f. $\cot \theta = \frac{15}{8}$



13. If $\sin(\theta) = -0.6$ and θ is in quadrant III, use the Pythagorean Identity to find $\cos(\theta)$.

$$\sin^2 \theta + \cos^2 \theta = 1 \rightarrow \cos^2 \theta = 1 - 0.36 = 0.64$$

$$(-0.6)^2 + \cos^2 \theta = 1 \rightarrow \cos^2 \theta = 0.64$$

$$0.36 + \cos^2 \theta = 1 \rightarrow \cos^2 \theta = 0.64$$

$$\cos \theta = \pm 0.8$$

Q III $\rightarrow \cos \theta = -0.8$

14. If $g(x) = \cos(x) - \sin(x)$, what is $g\left(\frac{\pi}{2}\right)$?

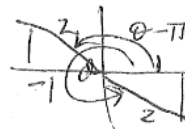
$$g\left(\frac{\pi}{2}\right) = \cos\left(\frac{\pi}{2}\right) - \sin\left(\frac{\pi}{2}\right) = 0 - 1 = -1$$

if using calc $\rightarrow$
Radian mode

15. If $\cos(\theta) = \frac{1}{2}$, and θ is in quadrant IV, find $\cos(\theta - \pi)$.

$$-\frac{1}{2}$$

Q II



TQ2

