

Name: AK
 Period: _____

Date: _____
 6.3 Practice Problems

Please write neatly in the space provided, showing all work. If the problem calls for an exact value, you may **not** use your calculator to evaluate the trig function.

1. For the angle, 585°

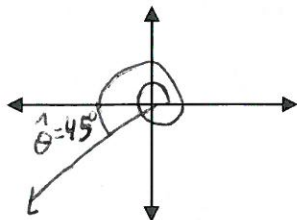
- Draw the angle in standard position.
- Convert to radian measure using exact values.
- Name the reference angle in both degrees and radians.

$$\frac{585\pi}{180} = \frac{117}{36} = \frac{13\pi}{4}$$

$$\frac{13\pi}{4}$$

$$\text{or } \frac{5\pi}{4} + \frac{8\pi}{4} = \frac{13\pi}{4}$$

$$\hat{\theta} = \frac{\pi}{4}, 45^\circ$$

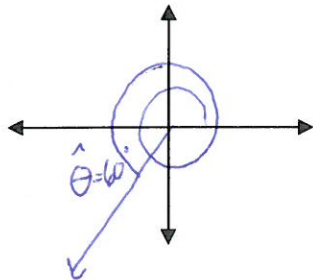


2. For the angle $\frac{10\pi}{3}$,

- Convert to degree measure.
- Draw the angle in standard position.
- Name the reference angle in both degrees and radians.

$$10 \left(\frac{\pi}{3} \right) = 10 \cdot 60 = 600^\circ$$

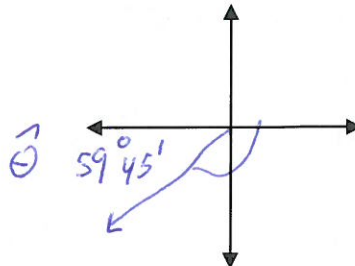
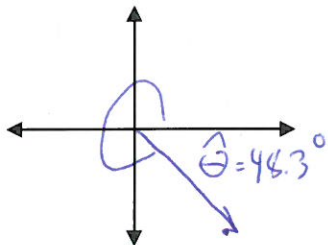
$$\hat{\theta} = 60^\circ = \frac{\pi}{3}$$



3. Draw θ in standard position and name the reference angle.

a. 311.7°

b. $-120^\circ 15'$



4. Find the exact value for the following:

a. $\sec -120^\circ = -2$

b. $\csc 570^\circ$
 -360
 $\csc 210 = -2$

c. $\tan -45^\circ$
 -1

d. $\cos \frac{7\pi}{2} - \frac{4\pi}{2}$
 $\cos \frac{3\pi}{2} = 0$

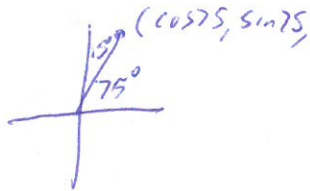
e. $\csc \frac{5\pi}{6} = 2$

e. $\cot \frac{15\pi}{4} - \frac{8\pi}{4}$
 $\cot \frac{7\pi}{4} = -1$

5. If $\cot \theta = -1.6977$ and θ lies in Q II, find θ to the nearest tenth of a degree is $0^\circ < \theta < 360^\circ$.

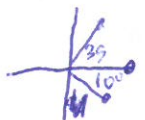
$$\tan^{-1}\left(\frac{1}{+1.6977}\right) = 30.5^\circ \rightarrow \theta = 149.5^\circ$$

$180 - 30.5^\circ$



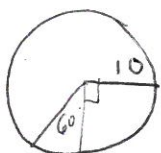
6. Complete the inequality:

$$\cos 35^\circ < \cos 350^\circ \quad \cos 75^\circ < \sin 75^\circ$$



Non Calc
Compare
x-values
using theta

7. If the minute hand of the clock is 10 inches long. What is the distance that the tip of the minute hand moves from 6:15 to 6:40?

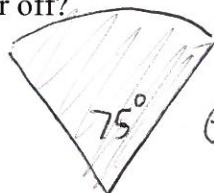


$$\theta = 150^\circ = \frac{5\pi}{6}$$

$$S = r\theta$$

$$S = 10 \left(\frac{5\pi}{6}\right) = \frac{25\pi}{6}$$

8. A windshield wiper is 18 inches long, and rotates 75° . If the blade covers the entire wiper what is the area that the blade can clear off?



$$\theta = \frac{75\pi}{180} = \frac{5\pi}{36}$$

$$A = \frac{1}{2} r^2 \theta$$

$$A = \frac{1}{2} (18)^2 \frac{5\pi}{36}$$

$$67.5\pi$$

$$\boxed{211.95}$$

9. Is the point $\left(\frac{8}{\sqrt{89}}, \frac{5}{\sqrt{89}}\right)$ on the unit circle? Why or Why not?

$$\left(\frac{8}{\sqrt{89}}\right)^2 + \left(\frac{5}{\sqrt{89}}\right)^2 \stackrel{?}{=} 1$$

$$\frac{64}{89} + \frac{25}{89} = 1 \quad \checkmark$$

on unit circle b/c
it works on the equation.

10. If $\sin \theta = \frac{2}{5}$, then $\sin(-\theta) = \underline{-2/5}$

11. If $\cot \theta = -\frac{7}{9}$, then $\cot(-\theta) = \underline{7/9}$

12. If $\cos \theta = \frac{2}{3}$, then $\cos(-\theta) = \underline{2/3}$

13. Where on the unit circle is $\cos \theta = -1$? Name the angle in degrees and radians.



$$\theta = \pi$$

or 180°

14. Find θ on the interval $0^\circ \leq \theta \leq 360^\circ$ given $\cos \theta = -.4057$ and θ in QIII.

$$\theta = \cos^{-1}(.4057) = 66^\circ$$

$$\theta = 180^\circ + 66^\circ$$

$$246^\circ$$

$$\frac{246^\circ}{315^\circ}$$

15. Give exact values for the following trigonometric functions.

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

$$\tan \frac{5\pi}{6} = \frac{\sqrt{3}}{3}$$

$$\sec \frac{7\pi}{4} = +\sqrt{2}$$