

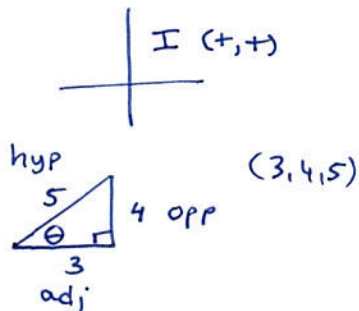
## Trig Extended: Circular Functions

### Review of Prior Concepts

(PARCC Sample Question)

1. Angle  $\theta$  is in Quadrant I, and  $\sin \theta = \frac{4}{5} \cdot \frac{\text{opp}}{\text{hyp}}$   
What is the value of  $\cos \theta$ ?

- A.  $\frac{4}{5}$   
 B.  $\frac{3}{5}$   
 C.  $-\frac{3}{5}$   
 D.  $-\frac{4}{5}$

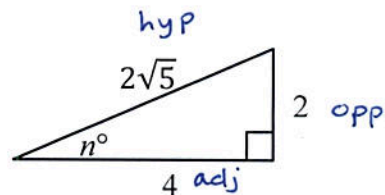


$$\cos \theta = \frac{\text{adj}}{\text{hyp}} = \frac{3}{5}$$

(ACT Sample Question)

2. In the following triangle, what is the value of  $\sec n$ ?

- A.  $\sqrt{5}$   
 B.  $2\sqrt{5}$   
 C.  $\frac{\sqrt{5}}{2}$   
 D.  $\frac{\sqrt{5}}{5}$   
 E.  $\frac{2\sqrt{5}}{5}$

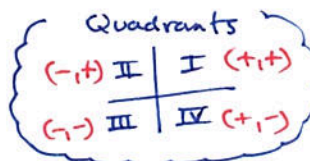
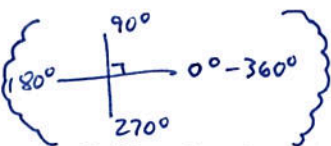
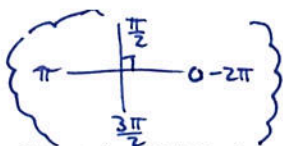


$$\begin{aligned} \sec n &= \frac{\text{hyp}}{\text{adj}} \\ &= \frac{2\sqrt{5}}{4} = \frac{\sqrt{5}}{2} \end{aligned}$$

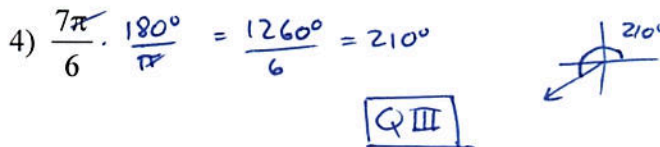
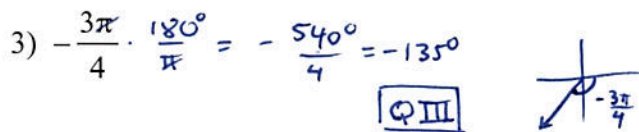
Key Idea	Definition (in your own words)	Sketch/Drawing/Diagram
Initial Side	Beginning position of the ray	
Vertex	Endpoint of ray	
Terminal Side	Final position of the ray	
Positive Angles	Counterclockwise rotations	
Negative Angles	Clockwise Rotations	
Standard Position	Vertex @ origin and initial side on positive x-axis	$60^\circ, -300^\circ, 420^\circ$ are co-terminal angles
Coterminal Angles	Angles with <u>same</u> initial side and <u>same</u> terminal side	

↳ observation: Add/subtract multiples of  $360^\circ / 2\pi$  radians to get coterminals.

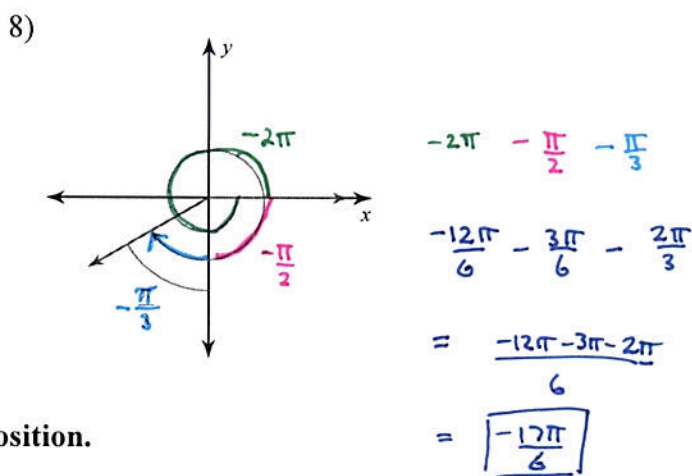
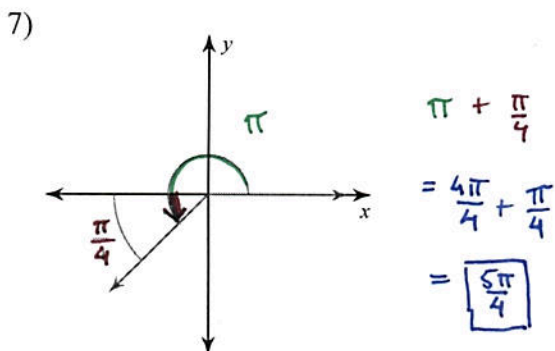
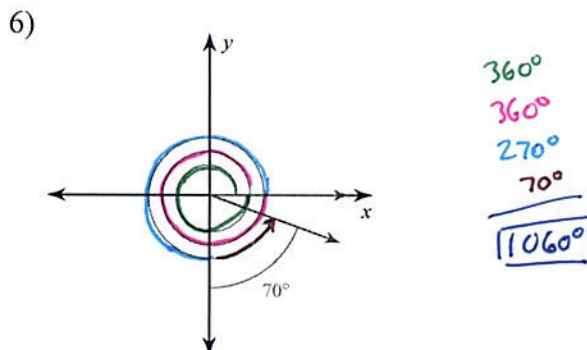
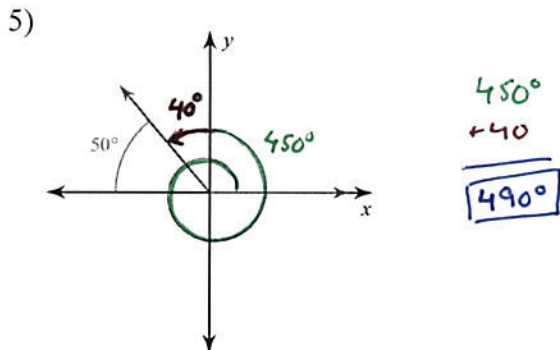
Examples



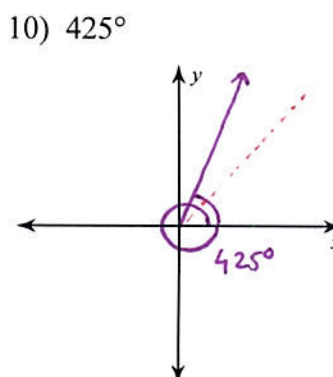
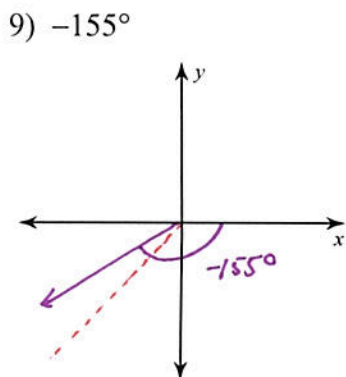
State the quadrant in which the terminal side of each angle lies.



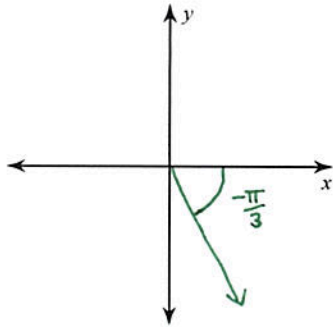
Find the measure of each angle.



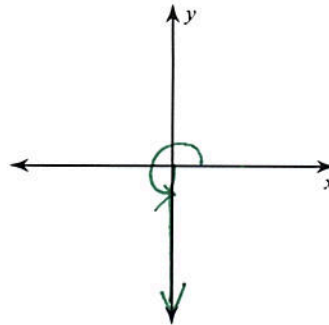
Draw an angle with the given measure in standard position.



11)  $-\frac{\pi}{3} \Leftrightarrow -60^\circ$



12)  $\frac{3\pi}{2} \Leftrightarrow 270^\circ$



"Quadrantal  $\angle$ "

State if the given angles are coterminal.

13)  $185^\circ, -535^\circ$   
 $\begin{array}{r} 185^\circ \\ +360^\circ \\ \hline -175^\circ \end{array} \rightarrow \begin{array}{r} -175^\circ \\ -360^\circ \\ \hline -535^\circ \end{array}$   
**YES**

14)  $70^\circ, -430^\circ$   
 $70^\circ - 360^\circ = -290^\circ$   
 $-290^\circ - 360^\circ = -650^\circ \neq -430^\circ$   
**NO**

Find a positive and a negative coterminal angle for each given angle.

15)  $-105^\circ$   
 $\begin{array}{r} -105^\circ \\ +360^\circ \\ \hline 255^\circ \end{array}$  Positive  $\angle$   
 $\begin{array}{r} -105^\circ \\ -360^\circ \\ \hline -465^\circ \end{array}$  Negative  $\angle$

Answers may vary

16)  $314^\circ$   
 $\begin{array}{r} 314^\circ \\ -360^\circ \\ \hline -46^\circ \end{array}$  Negative  $\angle$   
 $\begin{array}{r} 314^\circ \\ +360^\circ \\ \hline 674^\circ \end{array}$  Positive  $\angle$

17)  $\frac{11\pi}{6}$

$\frac{11\pi}{6} + 2\pi = \frac{11\pi}{6} + \frac{12\pi}{6}$   
 $= \frac{23\pi}{6}$  positive  $\angle$

$\frac{11\pi}{6} - 2\pi = \frac{11\pi}{6} - \frac{12\pi}{6}$   
 $= -\frac{\pi}{6}$

Answers may vary

18)  $-\frac{\pi}{2}$

$-\frac{\pi}{2} + 2\pi = -\frac{\pi}{2} + \frac{4\pi}{2} = \frac{3\pi}{2}$  positive  $\angle$

$-\frac{\pi}{2} - 2\pi = -\frac{\pi}{2} - \frac{4\pi}{2} = -\frac{5\pi}{2}$  Negative  $\angle$