Precalculus Honors

# Unit Circle Angles Notes

Name: _____

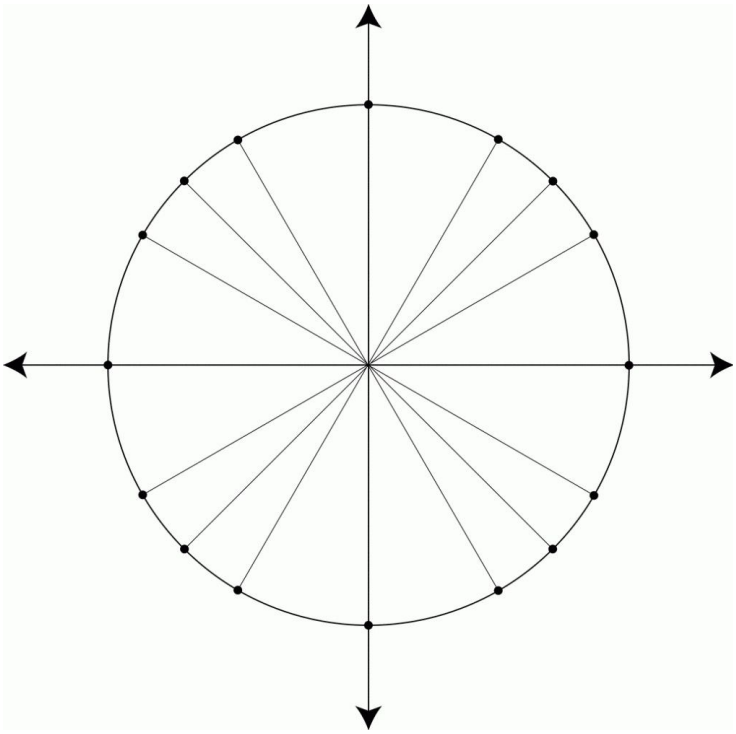
Date: _____

Period:____

G___

Use the circle to locate all of the angles with the radian measures listed below.

0, $\frac{\pi}{6}$, $\frac{\pi}{4}$, $\frac{\pi}{3}$, $\frac{\pi}{2}$, $\frac{2\pi}{3}$, $\frac{3\pi}{4}$, $\frac{5\pi}{6}$, $\pi$, $\frac{7\pi}{6}$, $\frac{5\pi}{4}$, $\frac{4\pi}{3}$, $\frac{3\pi}{2}$, $\frac{5\pi}{3}$, $\frac{7\pi}{4}$, $\frac{11\pi}{6}$, $2\pi$



What if you go the other direction? When you move clockwise around the unit circle, starting at the standard position (positive $x$-axis), the angle measures are negative. For each part below,
what is the positive angle that is **coterminal** (ends up at the same position on the circle) with the given negative angle?

For example, $-\frac{7\pi}{6}$ is coterminal with $\frac{5\pi}{6}$. (Verify this!)

a. $-\frac{2\pi}{3}$ b. $-\frac{5\pi}{4}$ c. $-\frac{11\pi}{6}$

Angle measures can go beyond $2\pi$ as well. For example, $\frac{13\pi}{6}$ is coterminal with $\frac{\pi}{6}$.
For each angle below, state the angle that is coterminal and between 0 and $2\pi$.

a. $\frac{10\pi}{3}$ b. $\frac{17\pi}{4}$ c. $-\frac{25\pi}{6}$

Use the angle measures from the previous problem to make some observations about the unit circle. For each part below, *a* is an integer.

a. Look at the angles that have measurements of the form $a\pi$. Where does the terminal ray of each of these angles intersect the circle?

b. Look at the angles that have measurements of the form $\frac{a\pi}{2}$. Where does the terminal ray of each of these angles intersect the circle?

c. Look at the angles that have measurements of the form $\frac{a\pi}{4}$. Where does the terminal ray of each of these angles intersect the circle?

d. Look at the angles that have measurements of the form $\frac{a\pi}{3}$. Which axis is the terminal ray of each of these angles closest to?

e. Look at the angles that have measurements of the form $\frac{a\pi}{6}$. Which axis is the terminal ray of each of these angles closest to?