

Name Key

Date 5/4 Hour _____

Algebra II Core - Unit 7 Review

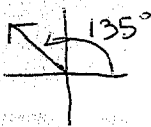
1) Complete the following for the given angle.

$$\frac{3\pi}{4}$$

a. Convert the angle to degrees.

$$\frac{3\pi}{4} * \frac{180}{\pi} = \frac{3 \cdot 180}{4} = \boxed{135^\circ}$$

b. Sketch the angle in standard form.



c. Find the value of the reference angle...

in degrees: 45°, in radian: $\frac{\pi}{4}$

d. Find the value of the sine, cosine, and tangent of the angle.

From the unit circle

$$\sin \frac{3\pi}{4} = \frac{\sqrt{2}}{2}$$

$$\tan \frac{3\pi}{4} = \frac{\frac{\sqrt{2}}{2}}{\frac{\sqrt{2}}{2}} = 1$$

$$\cos \frac{3\pi}{4} = -\frac{\sqrt{2}}{2}$$

3) The radius of a pie is 10 inches and the round edge of the crust of a slice measures 4.3 inches. Use the arc length formula $L = r\theta$ to find the angle of the pointed end of the slice.

$$r = 10 \quad L = 4.3$$

$$\frac{4.3}{10} = \frac{10\theta}{10}$$

$$\theta = 0.43$$

2) Complete the following for the given angle.

$$-\frac{\pi}{3}$$

a. Convert the angle to degrees.

$$-\frac{\pi}{3} * \frac{180}{\pi} = \frac{-180}{3} = \boxed{-60^\circ}$$

b. Sketch the angle in standard form.



c. Find the value of the reference angle...

in degrees: 60°, in radian: $\frac{\pi}{3}$

d. Find the value of the sine, cosine, and tangent of the angle.

$$-\frac{\pi}{3} = \frac{5\pi}{3}$$

$$\sin \frac{5\pi}{3} = -\frac{\sqrt{3}}{2}$$

$$\tan \frac{5\pi}{3} = \frac{-\frac{\sqrt{3}}{2}}{\frac{1}{2}} = -\frac{\sqrt{3}}{1} = \boxed{-\sqrt{3}}$$

$$\cos \frac{5\pi}{3} = \frac{1}{2}$$

4) The radius of a pie is 9.5 inches and the round edge of the crust of a slice measures 7.8 inches. Use the arc length formula $L = r\theta$ to find the angle of the pointed end of the slice.

$$L = 7.8 \quad 9.5 = r$$

$$\frac{7.8}{9.5} = \frac{9.5\theta}{9.5}$$

$$\theta = 0.82$$

5. Create a cosine function that will have an amplitude greater than $f(x) = 2\cos(x + 1)$ and less than $f(x) = 4\cos(x - \pi)$. Explain! What is the domain and range of your function?

$f(x) = 3\cos x$ has an amplitude of 3 which is between the other two amplitudes, 2 & 4.

$$D: (-\infty, \infty) \quad R: (-3, 3)$$

6. Create a sine function that will have an amplitude greater than $f(x) = \sin(x + 10)$ and less than $f(x) = -7\sin(x + \pi)$. Explain! What is the domain and range of your function?

$f(x) = 5\sin x$ has an amp of 5 which is between 1 & 7.

$$D: (-\infty, \infty) \quad R: (-5, 5)$$

7. Which of the following expressions are equivalent to $\cos 120^\circ$. Explain why each value is equivalent or not equivalent to $\cos 120^\circ$.

$$\cos 120^\circ = -\frac{1}{2}$$

a) $\cos \frac{4\pi}{3}$

Q III, same cosine value as Q II

b) $\cos 60^\circ$

x value in Q I is positive not negative. Not =

c) $\cos -120^\circ$

$\cos 240^\circ$

Same cosine value as Q II

d) $\cos 510^\circ$

-360°

$\cos 150^\circ$
Not the Same

e) $\cos 480^\circ$

-360°

$\cos 120^\circ$

$\cos 480^\circ$ is ~~to~~ coterminal to $\cos 120^\circ$ therefore they are equivalent

8. Which of the following expressions are equivalent to $\sin \frac{\pi}{4}$. Explain why each value is equivalent or not equivalent to $\sin \frac{\pi}{4} = \frac{\sqrt{2}}{2}$

a) $\cos \frac{\pi}{4}$

Same value
 $\frac{\sqrt{2}}{2}$

b) $\sin \frac{7\pi}{4}$

this value is negative therefore not the same

c) $\sin -135^\circ$

$\sin 225^\circ = -\frac{\sqrt{2}}{2}$

this negative so its not equivalent

d) $\sin 675^\circ$

-360°

$\sin 315^\circ$

this value is negative so it is not equivalent

e) $\sin 225^\circ = -\frac{\sqrt{2}}{2}$

this value is also negative so it is NOT equivalent