

Ch.5 Unit Circle Practice

NAME: _____

PER: _____

A. Define each function in terms of x and y (based on the unit circle with r = 1)

$\sin \theta =$

$\cos \theta =$

$\tan \theta =$

$\csc \theta =$

$\sec \theta =$

$\cot \theta =$

B. Principal Values: To find a unique solution for $\sin x$ and $\tan x$, refer only to Quadrant ___ or ___

To find a unique solution for $\cos x$, refer only to Quadrant ___ or ___

Refer to one of your unit circles resource pages from the past few days to answer the following questions:

<p>Evaluate using <i>exact</i> answers. No calculator!!</p> <ol style="list-style-type: none"> $\sin \frac{5\pi}{3}$ $\cos \frac{5\pi}{6}$ $\tan \frac{2\pi}{4}$ $\tan\left(-\frac{5\pi}{4}\right)$ $\cos \frac{8\pi}{3}$ $\cos\left(-\frac{5\pi}{6}\right)$ $\tan \frac{7\pi}{4}$ $\sin \frac{3\pi}{4}$ $\cos \frac{11\pi}{6}$ $\tan \frac{10\pi}{6}$ 	<ol style="list-style-type: none"> $\sin \frac{5\pi}{2}$ $\tan \frac{5\pi}{6}$ $\sin \pi$ $\sin \frac{5\pi}{4}$ $\tan \frac{8\pi}{6}$ $\sin \frac{19\pi}{6}$ $\cos \frac{5\pi}{3}$ $\tan \frac{5\pi}{4}$ $\cos \frac{5\pi}{6}$ $\tan\left(-\frac{4\pi}{3}\right)$ 	<p>Hint: TWO general solutions each!!</p> <ol style="list-style-type: none"> $\arctan(1) =$ <i>HINT: same as $\tan^{-1}(1)$ → rewrite as $\tan \theta = 1$, then evaluate</i> $\tan^{-1}(0) =$ $\sin^{-1}\left(\frac{-2\sqrt{3}}{4}\right) =$ $\arccos(0) =$ $\cos^{-1}\left(\frac{-\sqrt{2}}{2}\right) =$ $\arcsin\left(\frac{1}{2}\right) =$ <p>Hint: ONE solution each!! Sine and Tangent have principal values in quadrants I and IV only.</p> <ol style="list-style-type: none"> $\text{Arcsin}(0) =$ $\text{Arctan}\left(\frac{\sqrt{3}}{3}\right) =$ $\text{Arctan}(-1) =$ $\text{Arctan}\left(\frac{-4\sqrt{3}}{4}\right) =$
---	---	--

Hint for #1-20: add or subtract a rotation of 2π if given angle is less than 0 or greater than 2π

Check answers A, B, and #1-30:

-1	$\frac{-1}{2}$	$\frac{-\sqrt{3}}{2}$	$\frac{\sqrt{3}}{2}$	$\frac{\pi}{6}$	$\frac{-\pi}{3}$ or $\frac{5\pi}{3}$	$\frac{-\pi}{4}$ or $\frac{7\pi}{4}$	$\frac{5\pi}{4}$
-1	$\frac{1}{2}$	$\frac{-\sqrt{3}}{2}$	$\frac{-\sqrt{3}}{3}$	$\frac{\pi}{6}$	$\frac{4\pi}{3}$	$\frac{\pi}{4}$	$\frac{\pi}{2}$
1	$\frac{1}{2}$	$\frac{-\sqrt{3}}{2}$	$-\sqrt{3}$	$\frac{5\pi}{6}$	$\frac{5\pi}{3}$	$\frac{3\pi}{4}$	$\frac{3\pi}{2}$
1	$\frac{-\sqrt{2}}{2}$	$\frac{-\sqrt{3}}{2}$	$-\sqrt{3}$	undefined	x	$\frac{5\pi}{4}$	π
0	$\frac{-\sqrt{2}}{2}$	$\frac{-\sqrt{3}}{2}$	$-\sqrt{3}$	$\frac{y}{x}$	y	$\frac{1}{x}$	$\frac{1}{y}$
0	$\frac{\sqrt{2}}{2}$	$\frac{-\sqrt{3}}{2}$	$\sqrt{3}$	$\frac{x}{y}$	$\frac{1}{y}$	$\frac{1}{x}$	
0	$\frac{\sqrt{2}}{2}$	$\frac{-\sqrt{3}}{2}$	$\sqrt{3}$				
$\frac{-1}{2}$	$\frac{1}{2}$	$\frac{-\sqrt{3}}{2}$	$\sqrt{3}$				
		I II	I IV				