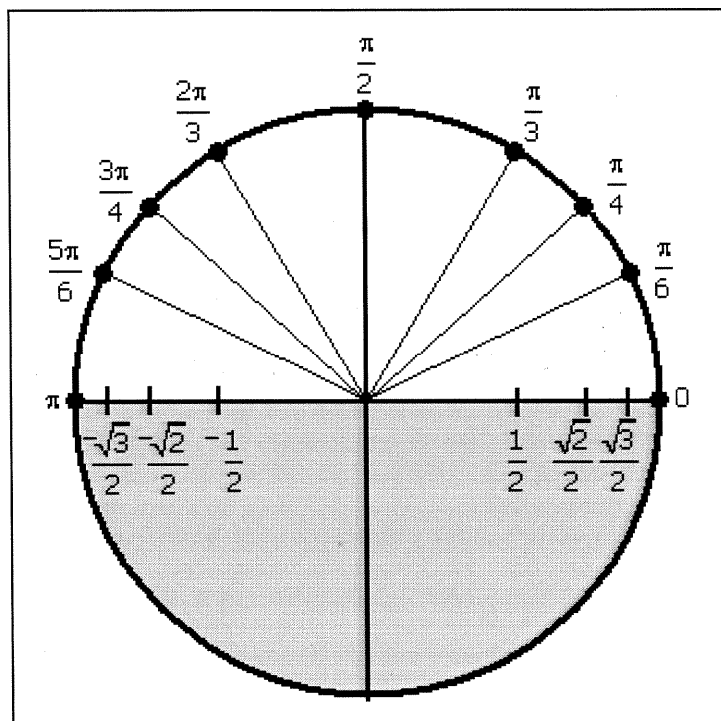


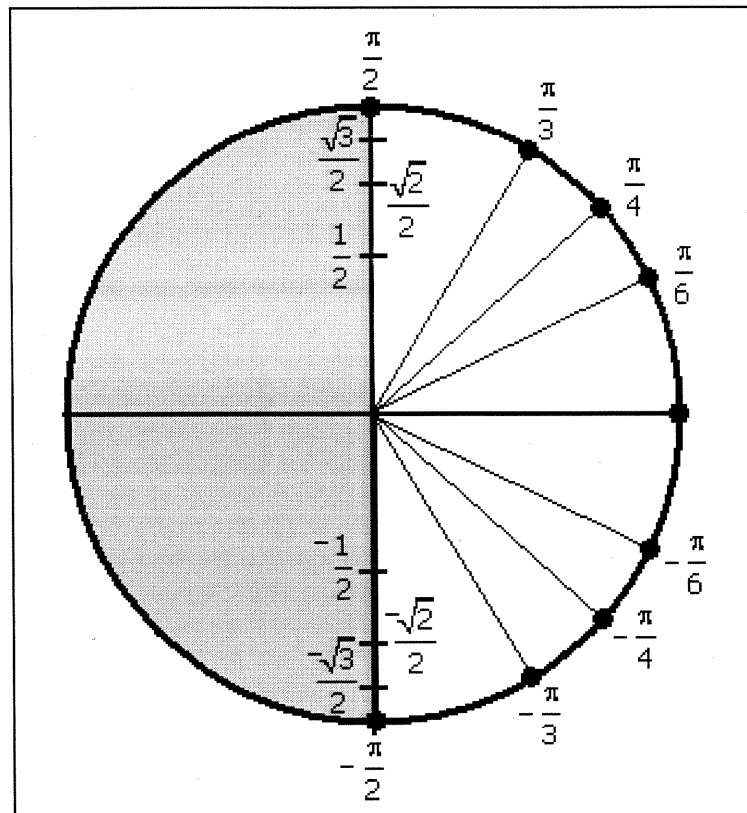
Cosine is the x -coordinate!

angle		$\cos(\theta)$
DEG	RAD	
0	0	1
30	$\frac{\pi}{6}$	$\frac{\sqrt{3}}{2}$
45	$\frac{\pi}{4}$	$\frac{\sqrt{2}}{2}$
60	$\frac{\pi}{3}$	$\frac{1}{2}$
90	$\frac{\pi}{2}$	0
120	$\frac{2\pi}{3}$	$-\frac{1}{2}$
135	$\frac{3\pi}{4}$	$-\frac{\sqrt{2}}{2}$
150	$\frac{5\pi}{6}$	$-\frac{\sqrt{3}}{2}$
180	π	-1



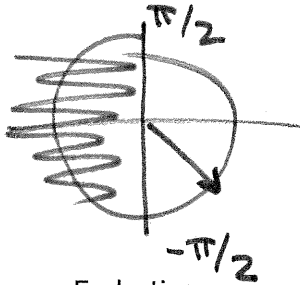
Sine is the y -coordinate!

angle		$\sin(\theta)$
DEG	RAD	
-90	$-\frac{\pi}{2}$	-1
-60	$-\frac{\pi}{3}$	$-\frac{\sqrt{3}}{2}$
-45	$-\frac{\pi}{4}$	$-\frac{\sqrt{2}}{2}$
-30	$-\frac{\pi}{6}$	$-\frac{1}{2}$
0	0	0
30	$\frac{\pi}{6}$	$\frac{1}{2}$
45	$\frac{\pi}{4}$	$\frac{\sqrt{2}}{2}$
60	$\frac{\pi}{3}$	$\frac{\sqrt{3}}{2}$
90	$\frac{\pi}{2}$	1



III. Inverse tangent/cotangent

A. What are the restrictions on the domain of $y = \tan^{-1}(x)$?



← Q IV answers
are negative angles!

B. Evaluation

1. Evaluate $\tan^{-1}(1)$, $\tan^{-1}(\sqrt{3})$, and $\tan^{-1}(-1)$ without using the calculator

$$\begin{aligned}\tan^{-1}(1) &= \frac{\pi}{4} & \tan^{-1}(-1) &= -\frac{\pi}{4} \\ \tan^{-1}(\sqrt{3}) &= \frac{\pi}{3}\end{aligned}$$

2. Evaluate $\tan^{-1}(500)$ and $\tan^{-1}(0.005)$ using the calculator, round to three decimals.

IV. Combining it all together - Evaluate the following

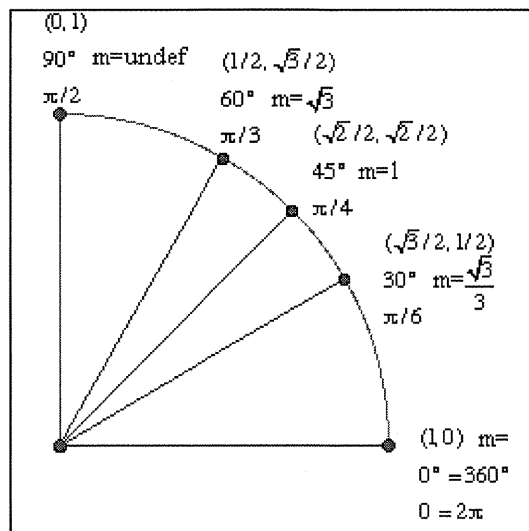
A. $\cos^{-1}\left[\sin\left(\frac{\pi}{4}\right)\right]$

B. $\tan\left[\cos^{-1}\left(\frac{\sqrt{3}}{2}\right)\right]$

(A) $\cos^{-1}\left(\sin\left(\frac{\pi}{4}\right)\right)$

$= \cos^{-1}\left(\frac{\sqrt{2}}{2}\right)$

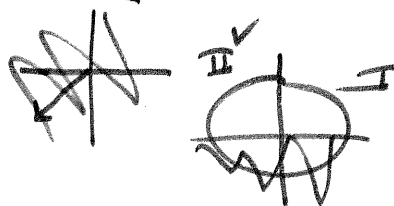
$= \boxed{\frac{\pi}{4}}$



(B) $\cos^{-1}\left(\sin\left(\frac{5\pi}{4}\right)\right)$

$= \cos^{-1}\left(-\frac{\sqrt{2}}{2}\right)$

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



(B) $\tan\left(\cos^{-1}\left(\frac{\sqrt{3}}{2}\right)\right)$

$= \tan\left(\frac{\pi}{6}\right)$

$= \sqrt{3}/3$

(B2) $\sin^{-1}\left(\cos\left(\frac{3\pi}{4}\right)\right)$

$= \sin^{-1}\left(-\frac{\sqrt{2}}{2}\right)$

$= \sin^{-1}\left(-\frac{\sqrt{2}}{2}\right)$

$= \boxed{-\frac{\pi}{4}}$

