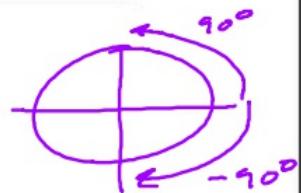
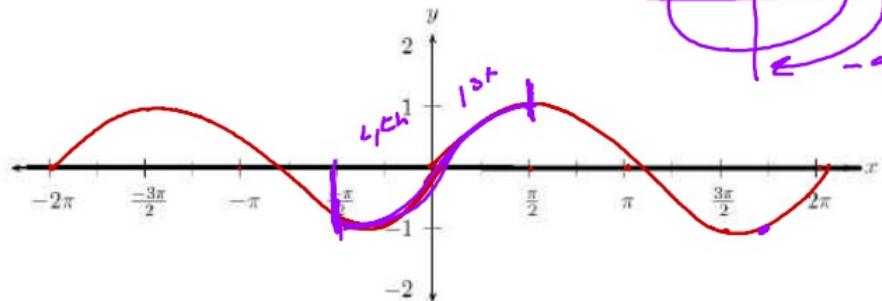
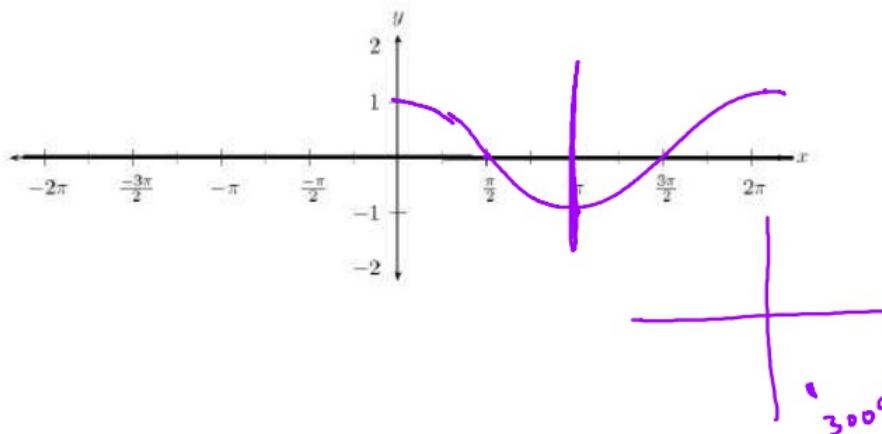
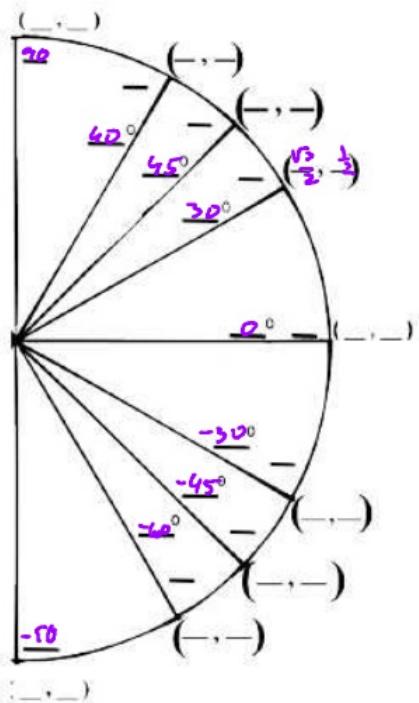


What you'll Learn About

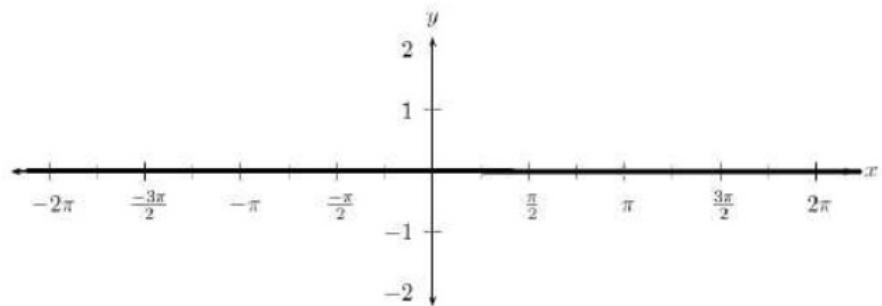
- Inverse Trigonometric Functions and their Graphs

The graph of $y = \sin x$ The graph of $y = \sin^{-1} x = \arcsin x$ 

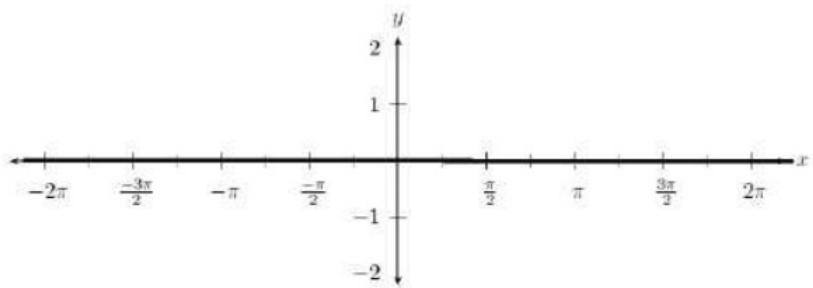
The Unit Circle and Inverse Functions



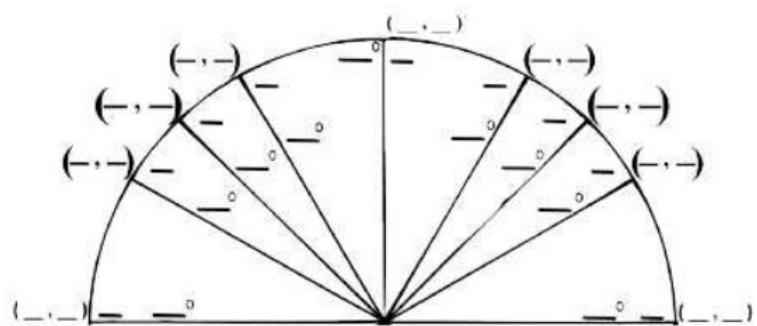
The graph of $y = \cos x$



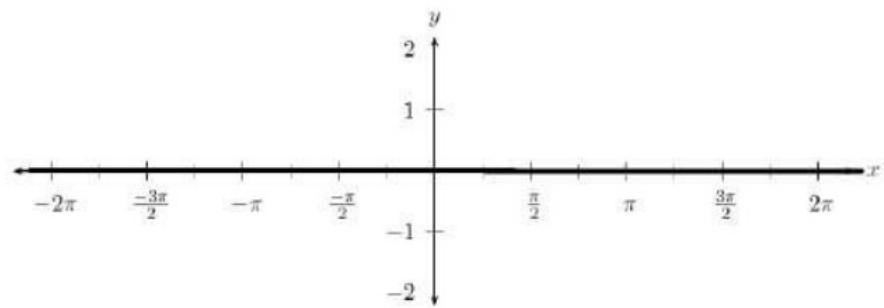
The graph of $y = \cos^{-1} x = \arccos x$



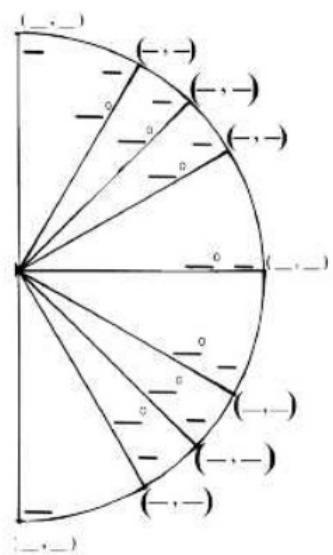
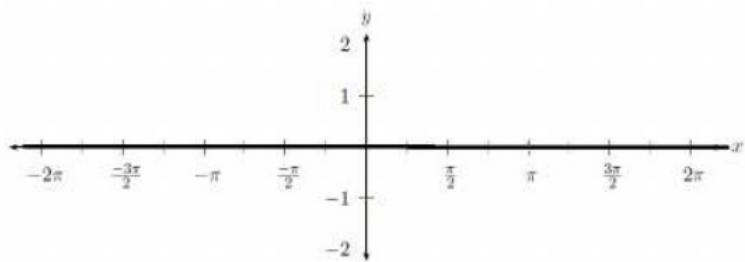
The Unit Circle and Inverse Functions



The graph of $y = \tan x$



The graph of $y = \tan^{-1} x = \arctan x$



Find the exact value

A) $\cos^{-1} \frac{\sqrt{3}}{2}$

$30^\circ \quad \frac{\pi}{6}$

B) $\cos^{-1} \frac{1}{2}$

$60^\circ \quad \frac{\pi}{3}$

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

$120^\circ \quad \frac{2\pi}{3}$

D) $\sin^{-1} \frac{-\sqrt{3}}{2}$

$-60^\circ \quad -\frac{\pi}{3}$

E) $\sin^{-1} \frac{1}{2}$

$30^\circ \quad \frac{\pi}{6}$

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

$\frac{1}{\sqrt{2}} \quad \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{2}}{2}$

$45^\circ \quad \frac{\pi}{4}$

G) $\tan^{-1}(1)$

$45^\circ \quad \frac{\pi}{4}$

H) $\tan^{-1}(\sqrt{3})$

$60^\circ \quad \frac{\pi}{3}$

I) $\tan^{-1} \left(\frac{-1}{\sqrt{3}} \right)$

$-30^\circ \quad -\frac{\pi}{6}$

J) $\cos^{-1}(0)$

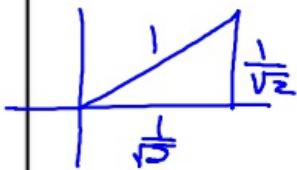
$90^\circ \quad \frac{\pi}{2}$

K) $\sin^{-1}(-1)$

$-90^\circ \quad -\frac{\pi}{2}$

L) $\tan^{-1}(0)$

$0^\circ \quad 0$



Use a calculator to find the approximate value in degrees. Draw the triangle that represents the situation.

A) $\arccos(.456)$

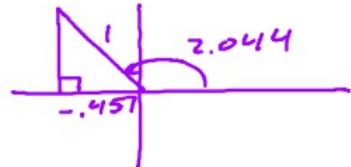
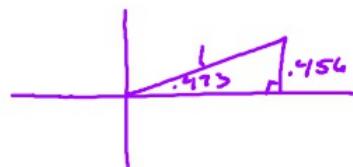
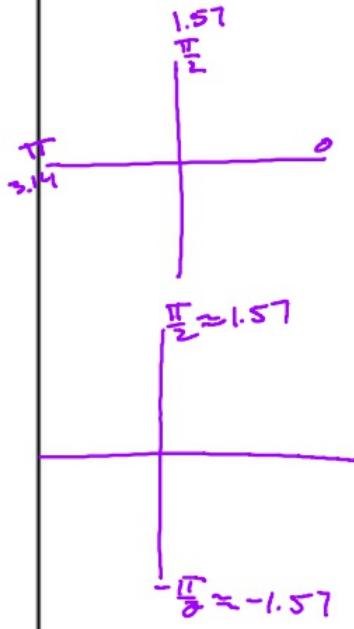
B) $\arcsin(-.456)$

C) $\arctan(-5.768)$

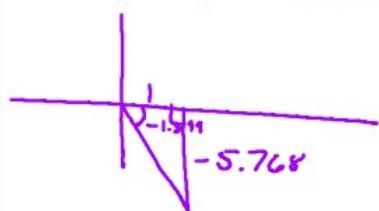
Use a calculator to find the approximate value in radians. Draw the triangle that represents the situation.

A) $\arcsin(.456) = .473$

B) $\arccos(-.456) = 2.044$



C) $\arctan(-5.768) = -1.399$



Find the exact value without a calculator.

A) $\sin(\cos^{-1}(1/2))$ $\cos^{-1}(1/2) = 60^\circ$
 $\sin 60^\circ = \frac{\sqrt{3}}{2}$ B) $\cos(\tan^{-1}(0)) = 1$
 $\sin(\cos^{-1}(1/2)) = \frac{\sqrt{3}}{2}$ $\tan^{-1}(0) = 0$
 $\cos(0) = 1$

C) $\tan\left(\sin^{-1}\left(\frac{\sqrt{2}}{2}\right)\right) = 1$ D) $\sin(\tan^{-1}(-\sqrt{3}))$
 $\tan(45^\circ) = 1$ $\sin(-60^\circ)$
 $= -\frac{\sqrt{3}}{2}$

E) $\cos^{-1}\left(\sin\left(\frac{\pi}{4}\right)\right)$ F) $\sin^{-1}\left(\cos\left(\frac{\pi}{6}\right)\right)$
 $\cos^{-1}\left(\frac{\sqrt{2}}{2}\right) = \frac{\pi}{4}$ $\sin^{-1}\left(\frac{\sqrt{3}}{2}\right)$
 60°

CO Function

$\sin 30^\circ$ $\cos 60^\circ$
 $\cos 50^\circ$ $\sin 40^\circ$

$\tan 30^\circ$ $\cot 60^\circ$

$\sin \theta = \cos(90^\circ - \theta)$
 $\cos \theta = \sin(90^\circ - \theta)$

