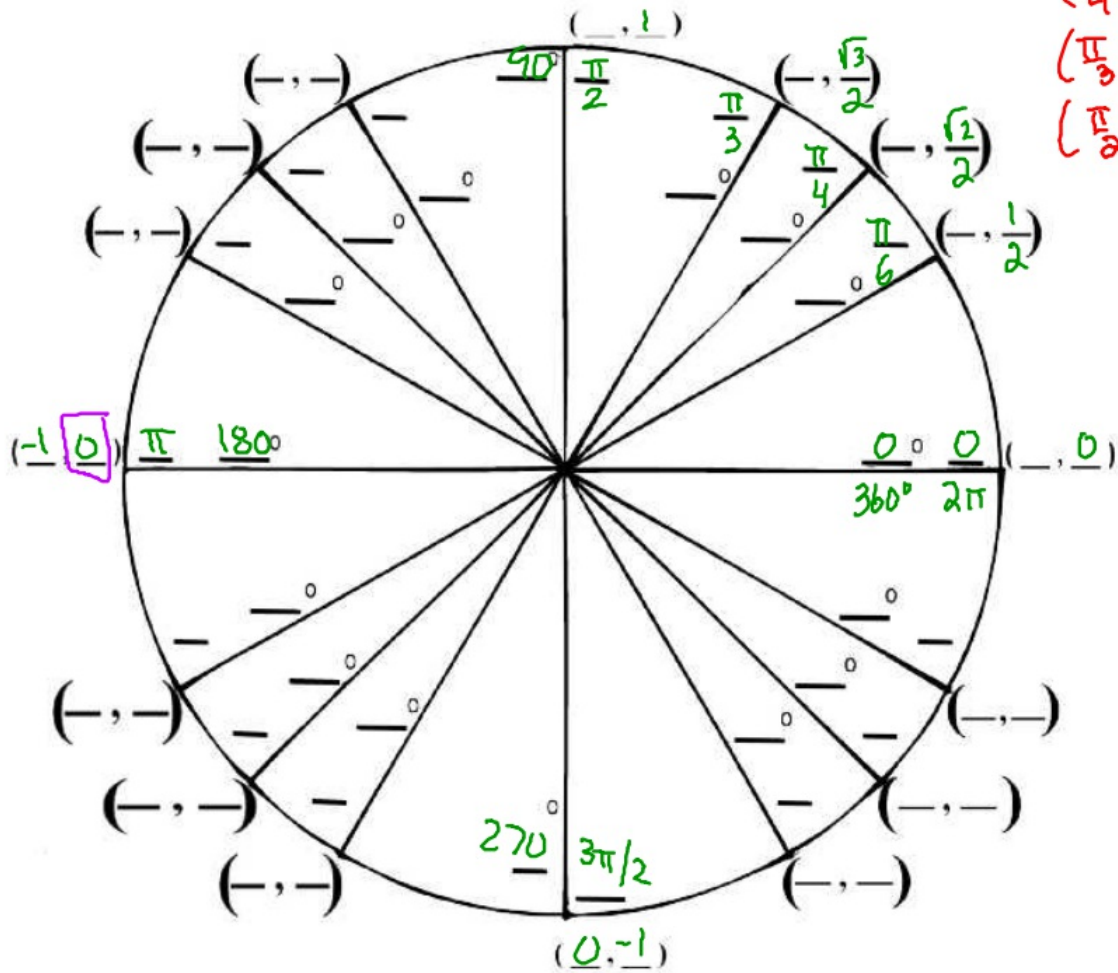


# Unit Circle, Fill in the blank



(angle, ratio)

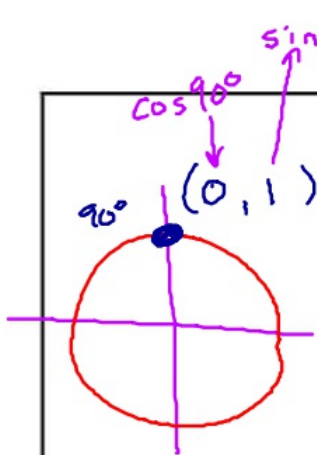
$(0, 0)$

$(\frac{\pi}{6}, \frac{1}{2})$

$(\frac{\pi}{4}, \frac{\sqrt{2}}{2})$

$(\frac{\pi}{3}, \frac{\sqrt{3}}{2})$

$(\frac{\pi}{2}, 1)$



Find sine, cosine, and tangent for the given angle.

A)  $90^\circ$

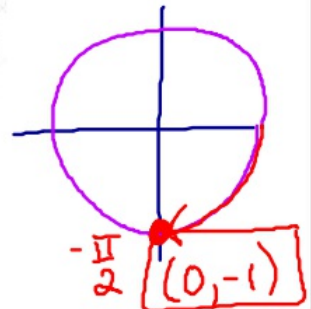
$$\cos 90^\circ = 0$$

$$\sin 90^\circ = 1$$

$$\tan 90^\circ = \frac{\sin 90^\circ}{\cos 90^\circ} = \frac{1}{0}$$

UND

B)  $-\frac{\pi}{2}$



$$\cos\left(\frac{\pi}{2}\right) = 0$$

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

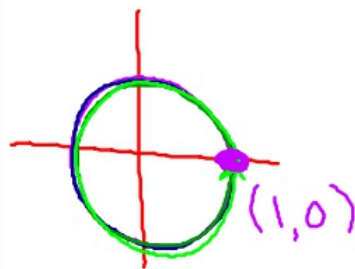
$$\tan\left(-\frac{\pi}{2}\right) = \text{UND}$$

$$\cos 6\pi = 1$$

$$\sin 6\pi = 0$$

$$\tan 6\pi = 0$$

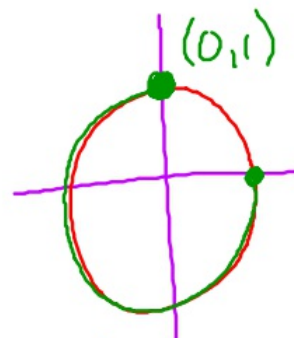
C)  $6\pi$



D)  $-\frac{7\pi}{2}$

$\frac{7\pi}{2}$

90  
7



630  
-360  
270

$$\cos\left(-\frac{7\pi}{2}\right) = 0$$

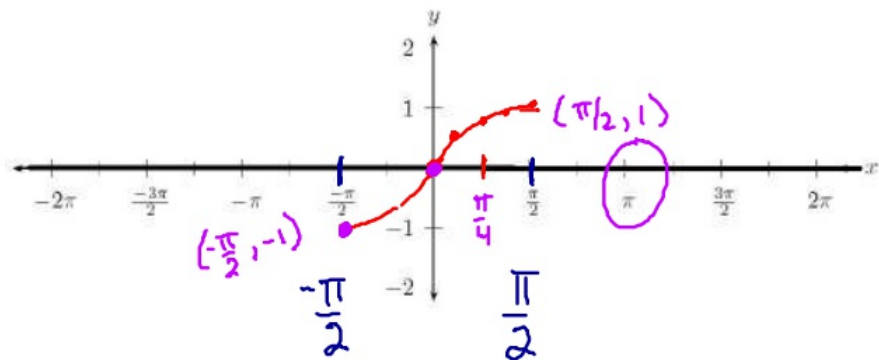
$$\sin\left(-\frac{7\pi}{2}\right) = 1$$

$$\tan\left(-\frac{7\pi}{2}\right) = \text{UND}$$

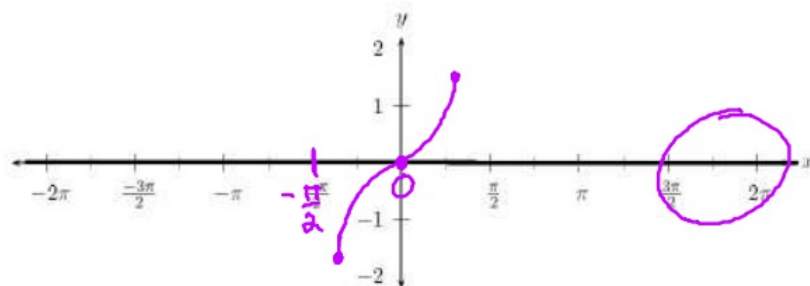
What you'll Learn About

- Inverse Trigonometric Functions and their Graphs

The graph of  $y = \sin x$



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

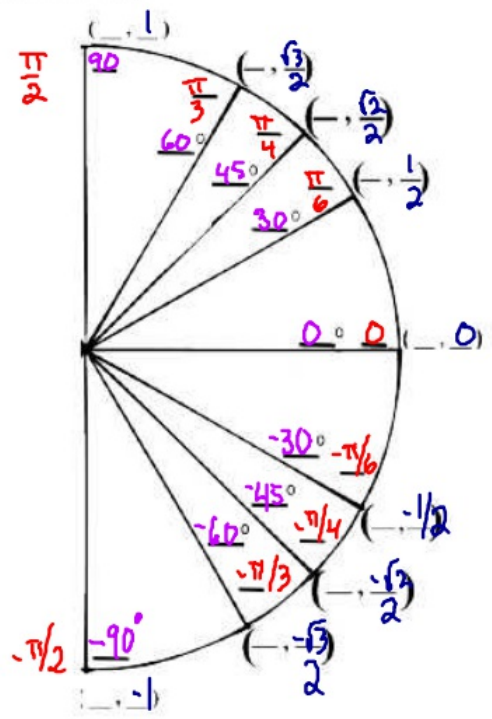


$$y = \sin^{-1} x$$

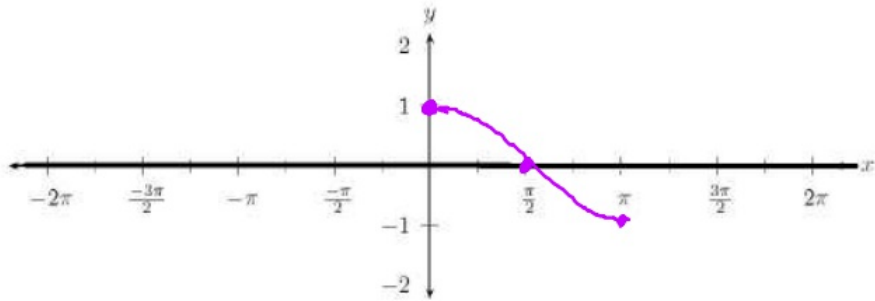
$$y = \arcsin x$$

$$\sin^{-1}(0) = 0 \text{ or } 180^\circ$$

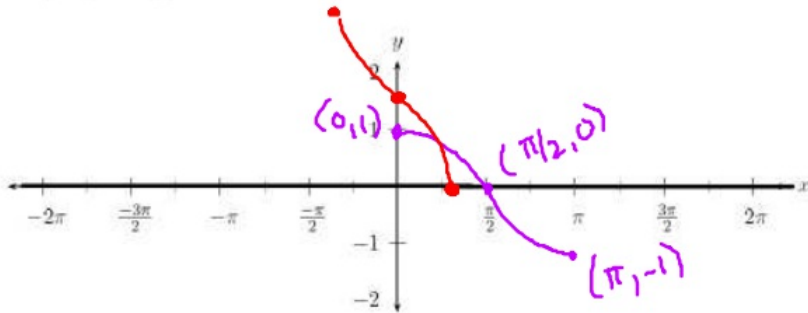
The Unit Circle and Inverse Functions



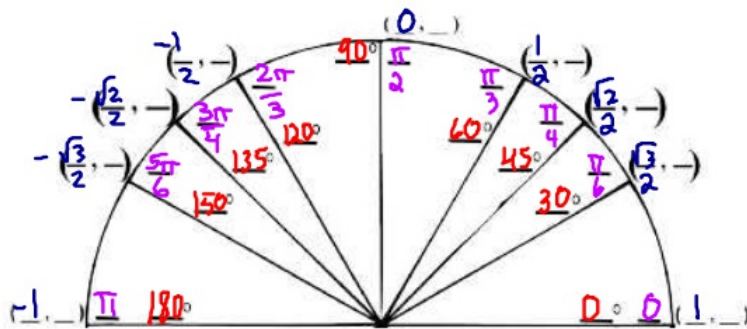
The graph of  $y = \cos x$



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



The Unit Circle and Inverse Functions



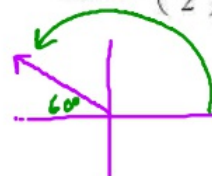
$$\frac{1}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{2}}{2}$$

Find the exact value (Find the angle)

A)  $\cos^{-1} \frac{\sqrt{3}}{2} = 30^\circ$   
 $= \frac{\pi}{6}$

B)  $\cos^{-1} \frac{1}{2} = 60^\circ$   
 $= \frac{\pi}{3}$

C)  $\cos^{-1} \left( \frac{-1}{2} \right) = 120^\circ$



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

E)  $\sin^{-1} \frac{1}{2}$   
 $\sin^{-1} \left( \frac{1}{2} \right) = 30^\circ$   
 $= \frac{\pi}{6}$

F)  $\sin^{-1} \left( \frac{1}{\sqrt{2}} \right)$   
 $\sin^{-1} \left( \frac{1}{\sqrt{2}} \right)$   
 $\sin^{-1} \left( \frac{\sqrt{2}}{2} \right) = 45^\circ$

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

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

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

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

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

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