

# 4.7 Inverse Trig Functions

\* Inverse trig functions find missing angles.

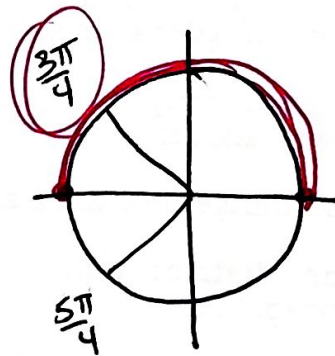
inverse trig function  $\neq$  reciprocal trig function

inverse

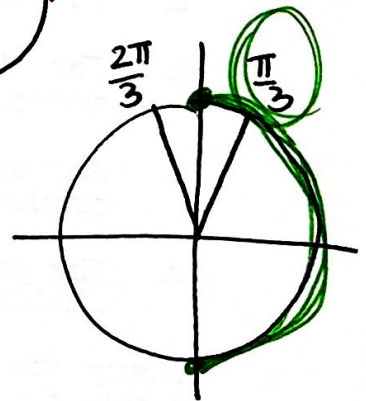
$\sin \longrightarrow \sin^{-1} / \arcsin$   
 $\cos \longrightarrow \cos^{-1} / \arccos$   
 $\tan \longrightarrow \tan^{-1} / \arctan$

$\sin^{-1}(\sin(\frac{\pi}{3})) = \boxed{\frac{\pi}{3}}$   
 ↑      ↑  
 undoes  
 sin

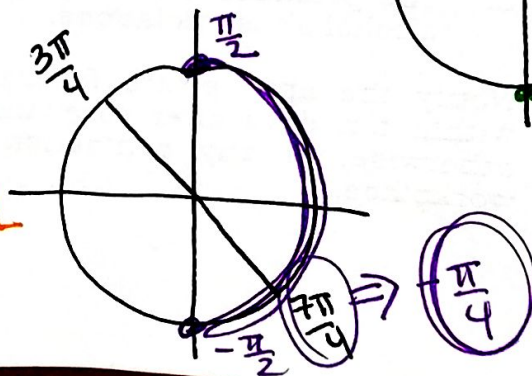
ex:  $\arccos(-\frac{\sqrt{2}}{2}) = \boxed{\frac{3\pi}{4}}$   
 what  $\theta$  has a  
 $\cos = -\frac{\sqrt{2}}{2}$ ?



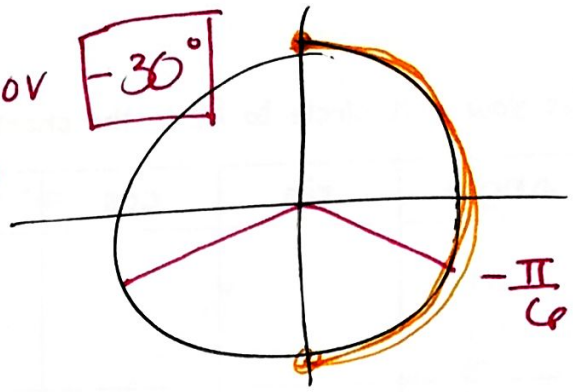
ex:  $\sin^{-1}(\frac{\sqrt{3}}{2}) = \boxed{\frac{\pi}{3}}$   
 what  $\theta$  has a  
 $\sin = \frac{\sqrt{3}}{2}$ ?



ex:  $\arctan(-1) = \boxed{-\frac{\pi}{4}}$   
 $\tan \theta = -1$ ?



ex:  $\arcsin\left(-\frac{1}{2}\right) = \boxed{-\frac{\pi}{6}}$  or  $\boxed{-30^\circ}$

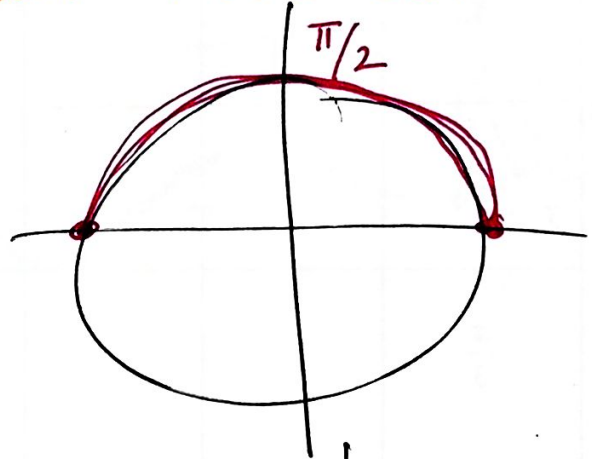


ex:  $\cos^{-1}\left(\cos\frac{3\pi}{2}\right)$

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

$\boxed{\frac{\pi}{2}}$

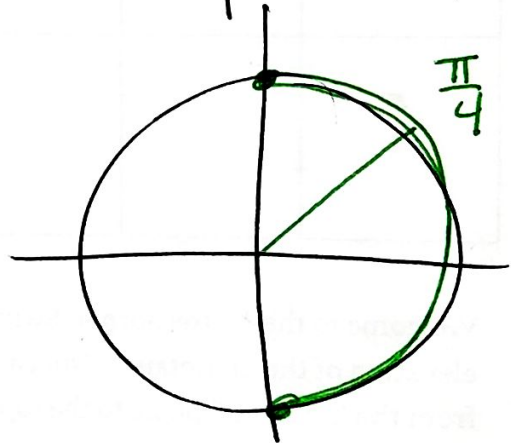
work inside out



ex:  $\sin(\arctan 1)$

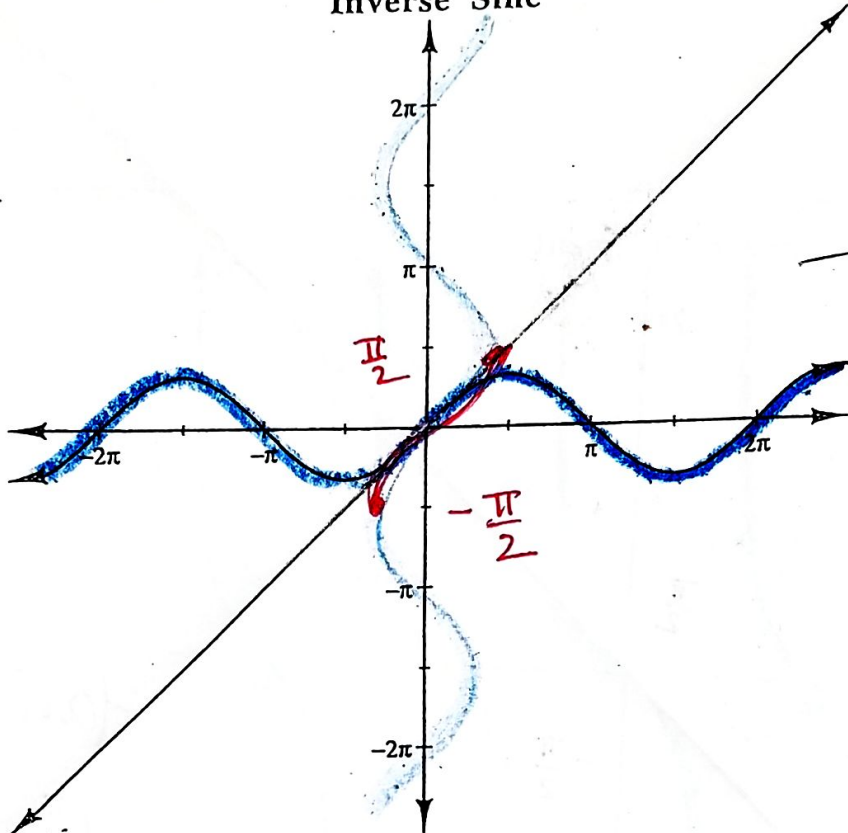
$\sin\left(\frac{\pi}{4}\right)$

$= \boxed{\frac{\sqrt{2}}{2}}$

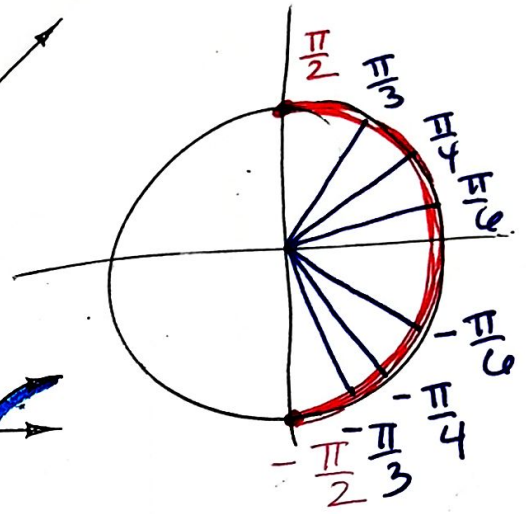


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### Inverse Sine

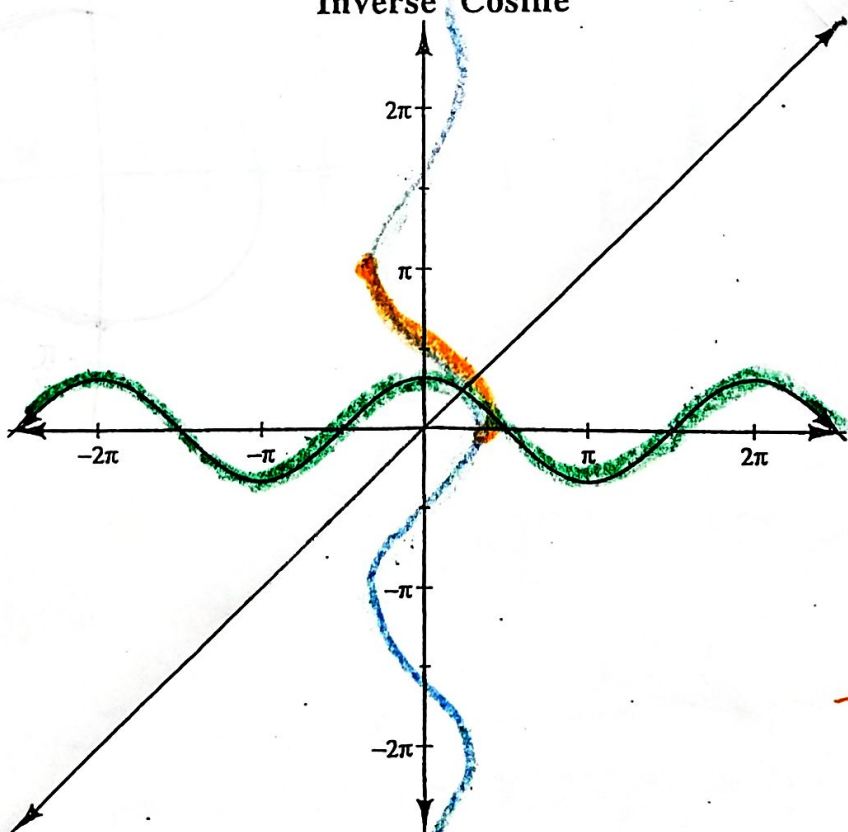


$\tan^{-1}$   
 $\sin^{-1} X$

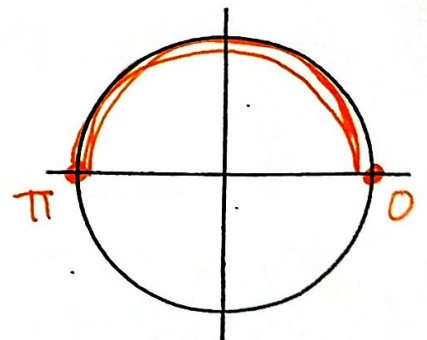


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### Inverse Cosine

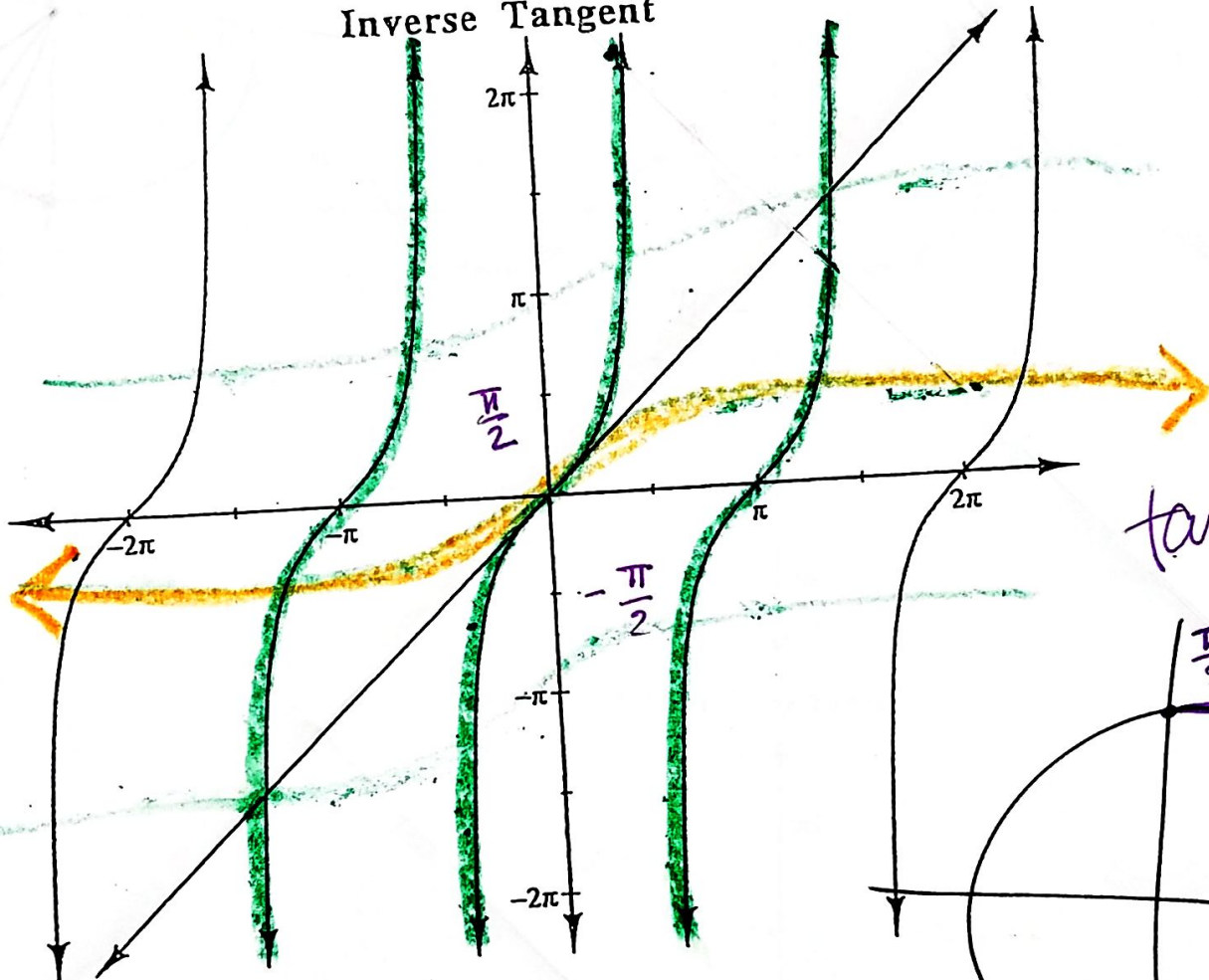


$\cos^{-1} X$



36.

### Inverse Tangent



$\tan^{-1}x$

