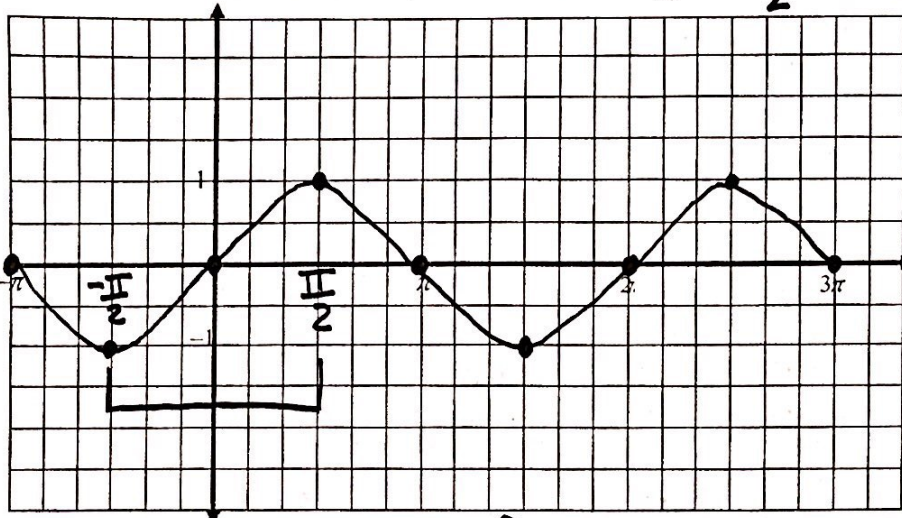


## Inverse Trigonometric Graphs

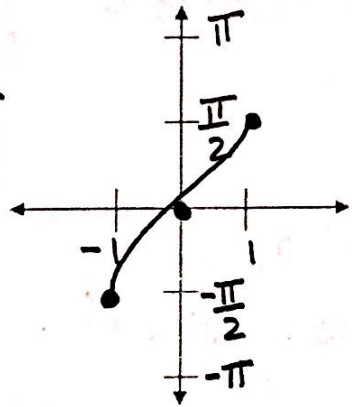
$y = \sin x$  Restrict domain from  $-\frac{\pi}{2}$  to  $\frac{\pi}{2}$

QI & QIV

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



X	Y
$\frac{\pi}{2}$	1
0	0
$-\frac{\pi}{2}$	-1

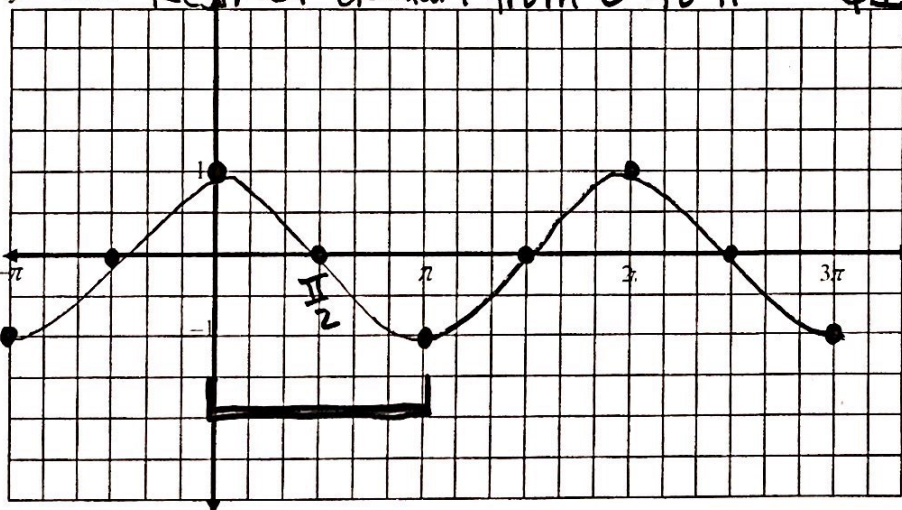


Y	X
1	$\frac{\pi}{2}$
0	0
-1	$-\frac{\pi}{2}$

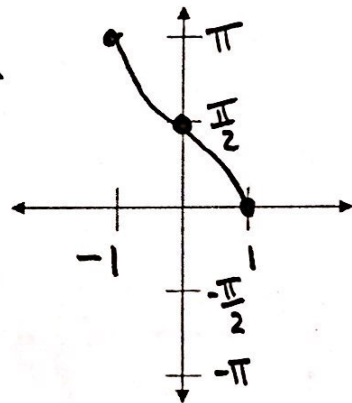
$y = \cos x$  Restrict domain from 0 to  $\pi$

QI & QII

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



X	Y
0	1
$\frac{\pi}{2}$	0
$\pi$	-1

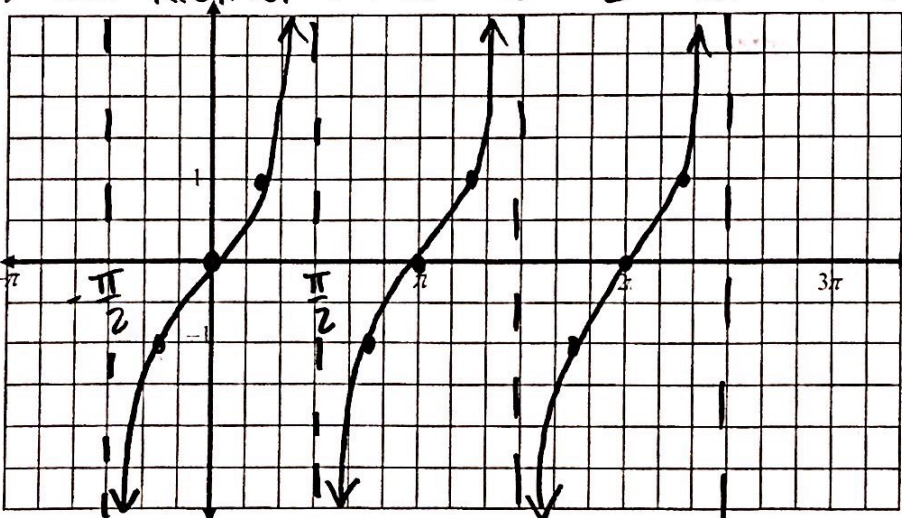


Y	X
1	0
0	$\frac{\pi}{2}$
-1	$\pi$

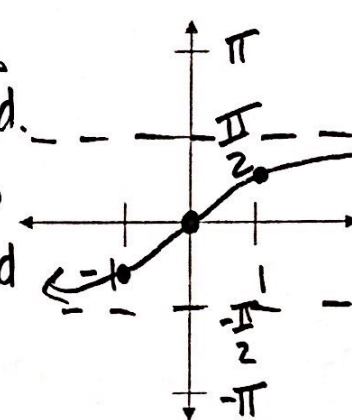
$y = \tan x$  Restrict domain to  $-\frac{\pi}{2}$  to  $\frac{\pi}{2}$

QI & QIV

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



X	Y
$\frac{\pi}{2}$	und.
0	0
$-\frac{\pi}{2}$	und.



Y	X
und.	$\frac{\pi}{2}$
0	0
und.	$-\frac{\pi}{2}$

## Inverse Trigonometric Graphs

Describe the transformation of each parent inverse trig function.

1.  $y = 2\arcsin(\theta - 3) + \pi$

Vertical stretch of 2  
Right 3  
Up  $\pi$

2.  $y = 4\arctan(-\theta) - 3\pi$

Vertical stretch 4  
Reflect over y  
Down  $3\pi$

3.  $y = -2\arccos(\theta + 4) + \frac{\pi}{2}$

Reflect over x  
vert. stretch of 2  
Left 4  
Up  $\pi/2$

4.  $y = 3\sin^{-1}(2\theta)$

Vertical stretch of 3  
Horizontal shrink of 2

5.  $y = -0.3\cos^{-1}\left(\frac{1}{2}\theta\right)$

Reflect over x  
Vert. Shrink of 0.3  
Hor. Stretch of  $\frac{1}{2}$

6.  $y = \tan^{-1}(-\theta + 2)$

$y = \tan^{-1} - (\theta - 2)$   
Reflect over y  
Right 2

Evaluate each inverse expression for principal values only and write your final answer as an exact value. If no solution exists put "DNE".

$\sin \ \& \ \tan \implies \text{QI \& QIV}$

$\cos \implies \text{QI \& QII}$

7.  $\sin^{-1} 0$

$0$

8.  $\arcsin \frac{\sqrt{3}}{2}$

$\frac{\pi}{3}$

~~9.  $\arcsin \frac{\sqrt{3}}{2}$~~

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

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

11.  $\arccos 0$

$\frac{\pi}{2}$

12.  $\cos^{-1} \frac{\sqrt{2}}{2}$

$\frac{\pi}{4}$

13.  $\arccos(-1)$

$\pi$

14.  $\arccos \frac{\sqrt{3}}{2}$

$\frac{\pi}{6}$

15.  $\arctan(1)$

$\frac{\pi}{4}$

$\frac{y}{x}$

16.  $\arctan(-\sqrt{3})$

$-\frac{\pi}{3}$

17.  $\tan^{-1} \frac{\sqrt{3}}{3}$

$\frac{\pi}{6}$

18.  $\tan^{-1}(0)$

$0$