

4.6 HW Q2

$$bx-h = \pm \frac{\pi}{2}$$

① graph 2 periods of  
 $y = -2 \tan \frac{1}{2}x$

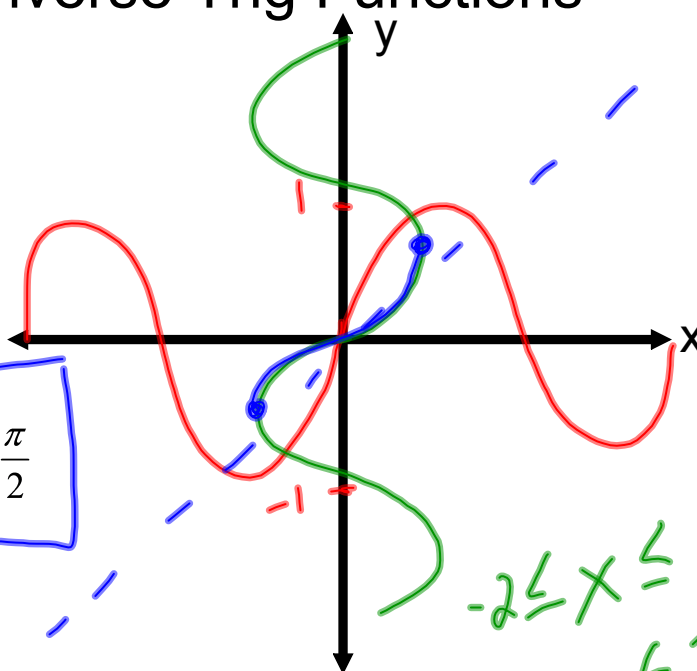
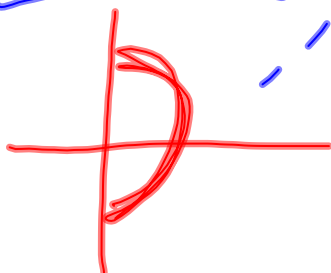
asymptotes:  
 x-int:

## Chapter 4.7: Inverse Trig Functions

Inverse Sine

$\sin^{-1} x$  arcsin

Domain:  $-\frac{\pi}{2} \leq \theta \leq \frac{\pi}{2}$



$$-2 \leq x \leq 2$$

$$-\pi \leq y \leq \pi/4$$

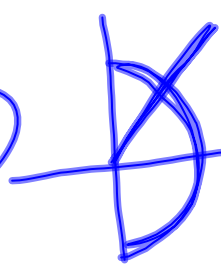
## Finding exact values of arcsin:

1. Let  $\theta = \arcsin(x)$
2. solve for  $x$
3. Make sure your angles is in the domain.

ex. Find the exact value of  $\sin^{-1} \frac{\sqrt{2}}{2}$

$$\sin \theta = \frac{\sqrt{2}}{2}$$

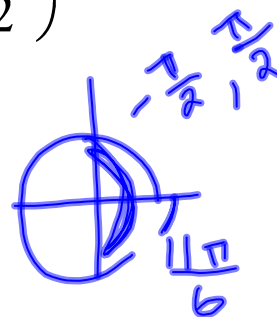
$\frac{\pi}{4}$  or  $45^\circ$



find the exact value of  $\sin^{-1}\left(\frac{-1}{2}\right)$

$$\sin \theta = -\frac{1}{2}$$

$$\boxed{-\frac{\pi}{6}, -30^\circ}$$

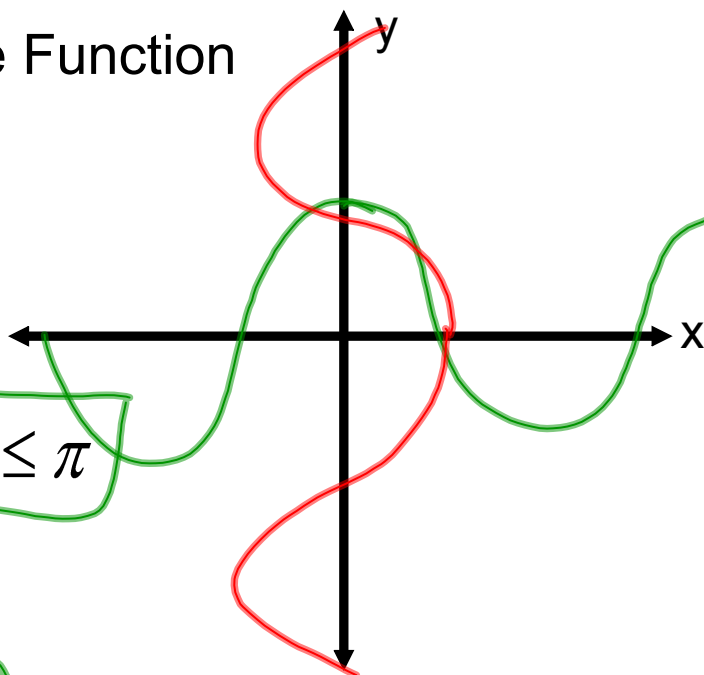
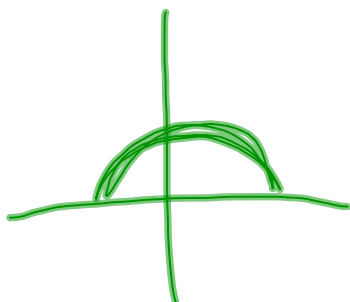


## Inverse Cosine Function

$\cos^{-1}$     arccos

Domain:

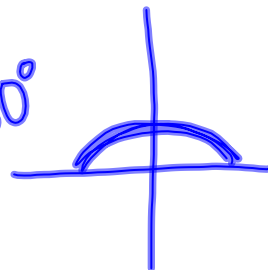
$$\boxed{0 \leq \theta \leq \pi}$$



Find the exact value of:  $\arccos\left(-\frac{\sqrt{3}}{2}\right)$

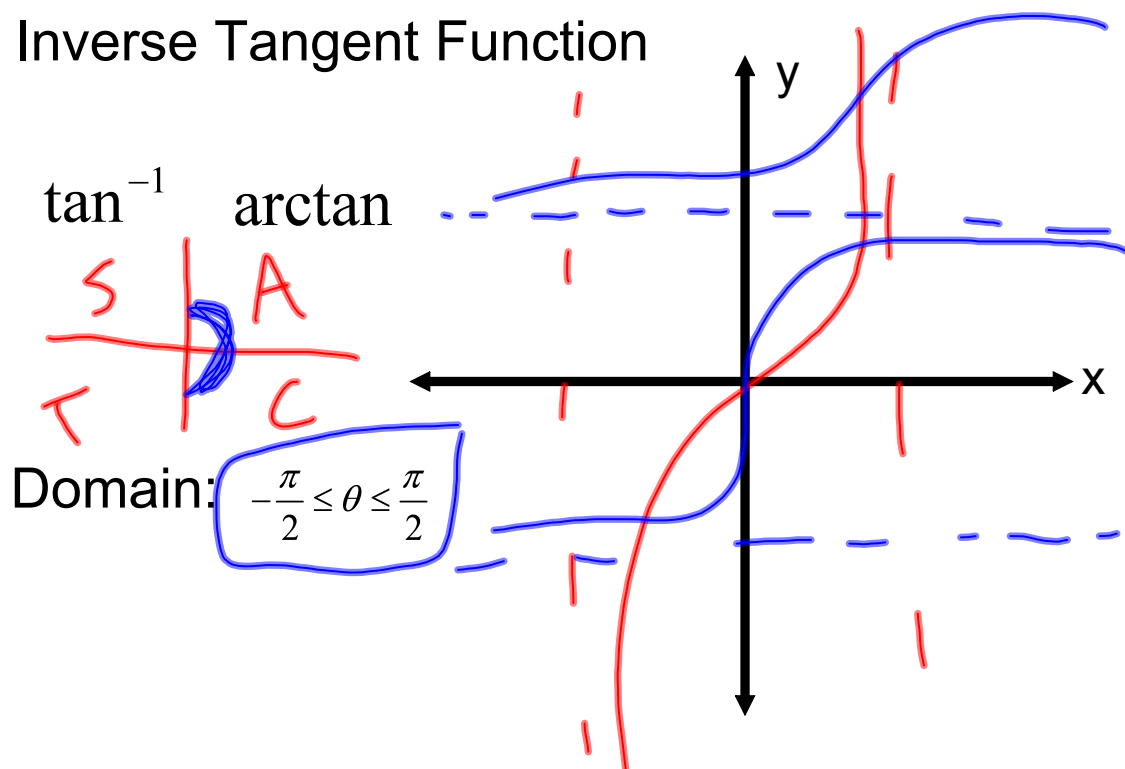
$$\cos \theta = -\frac{\sqrt{3}}{2}$$

$$\theta = \frac{5\pi}{6} \text{ or } 150^\circ$$

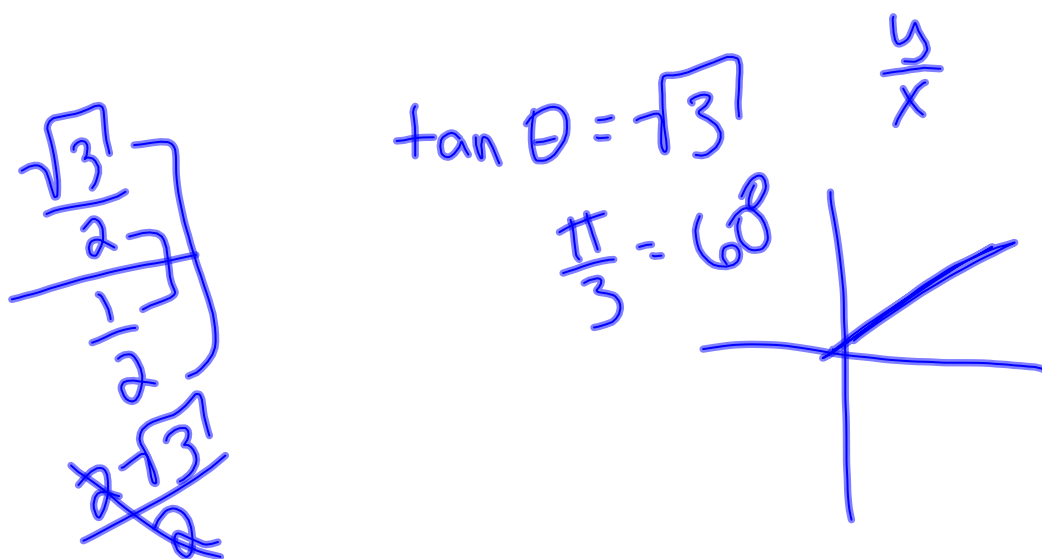


$$0 \leq \theta \leq \pi$$

## Inverse Tangent Function



Find the exact value for  $\tan^{-1} \sqrt{3}$



can use the calculator also when finding these. be mindful of exact values (meaning no decimals)

## Composition of Functions

$$\sin(\sin^{-1} x) = x$$

for  $[-1, 1]$

$$\sin^{-1}(\sin x) = x$$

for  $\left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$

$$\cos(\cos^{-1} x) = x$$

for  $[-1, 1]$

$$\cos^{-1}(\cos x) = x$$

for  $[0, \pi]$

$$\tan(\tan^{-1} x) = x$$

for all  $x$

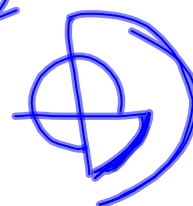
$$\tan^{-1}(\tan x) = x$$

for  $\left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$

$$\cos(\cos^{-1}(0.6)) = .6$$

$$\cancel{\sin^{-1}\left(\cancel{\sin\left(\frac{3\pi}{2}\right)}\right)}$$

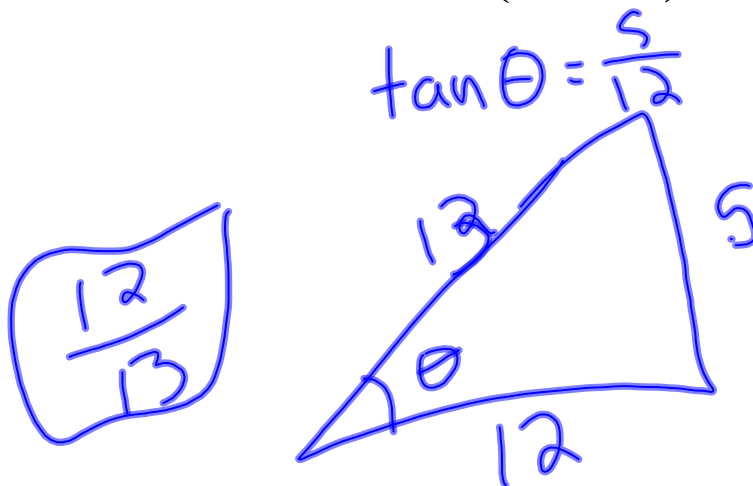
$-\frac{\pi}{2}$



$$\cos(\cos^{-1} 2\pi)$$

no sol

find the exact value of  $\cos\left(\tan^{-1}\frac{5}{12}\right)$



Find the exact value of  $\cot\left(\sin^{-1}\frac{1}{3}\right)$

Problems: Ch 4.7 pg.522 #'s  
3,7,11,15,17,25,33,39,43,47,53

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