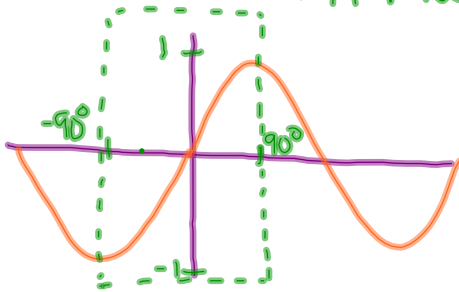


Section 7.8: Inverse Trig Functions

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

~~$f(x) = x^2$~~
 ~~$f^{-1}(x) = \sqrt{x}$~~

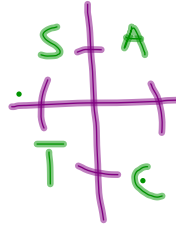
• For a function to have an inverse function it must be one-to-one



pass the H-line test

-90° to 90°

restrict: $[-\frac{\pi}{2} \text{ to } \frac{\pi}{2}]$



$\sin^{-1}(\frac{1}{2}) = 30^\circ$

$\sin ? = \frac{1}{2}$

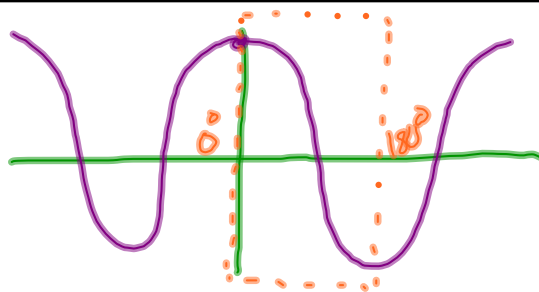
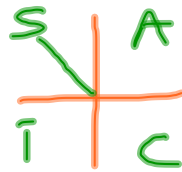
$\arcsin(\frac{1}{2}) = 30^\circ$

$\arcsin(-\frac{\sqrt{2}}{2}) = -45^\circ$

$\sin^{-1}(1) = 90^\circ$

$\arcsin(2) = \text{Not Real}$

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



$\cos^{-1}(-\frac{\sqrt{2}}{2}) = 135^\circ$

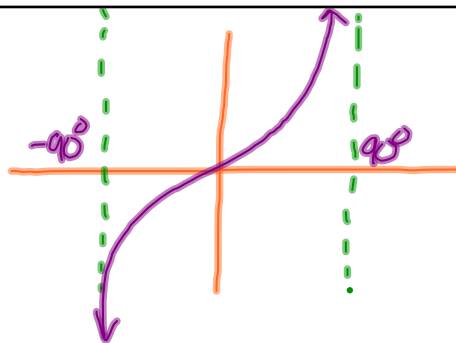
$\arccos(-1) = 180^\circ$

$\arccos(\frac{\sqrt{3}}{2}) = 30^\circ$

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

$$\left[-\frac{\pi}{2} \text{ to } \frac{\pi}{2}\right]$$

just like \sin^{-1}



$$\tan^{-1}(1) = 45^\circ$$

$$\arctan(-1) = -45^\circ$$

Combined Trig. functions

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

$$\arccos(\cos(45^\circ)) = 45^\circ$$

$$\tan^{-1}(\tan(225^\circ)) =$$

$$\tan^{-1}(-1) = -45^\circ$$