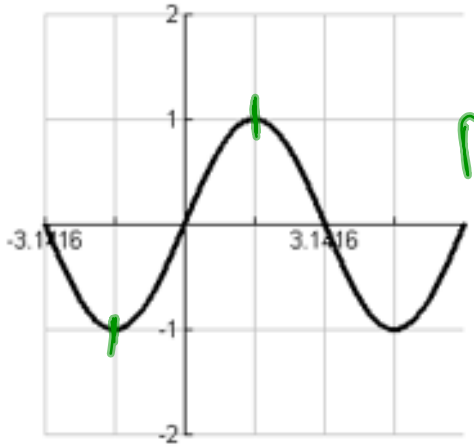
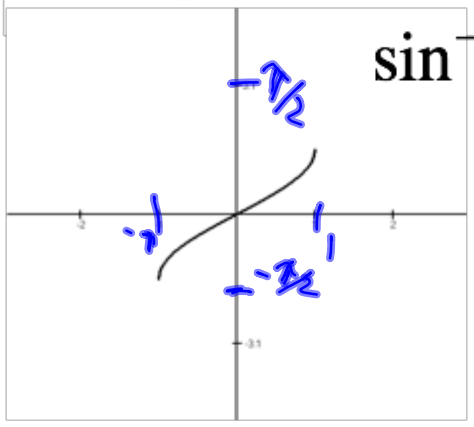
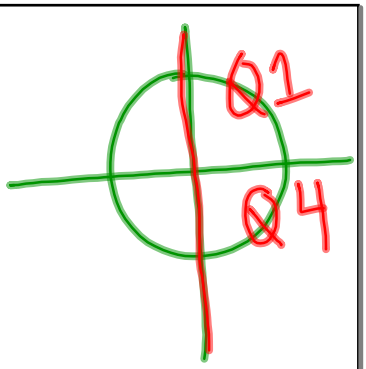
Inverse Trig Functions



sinx
D: $[-\pi/2, \pi/2]$
R: $[-1, 1]$

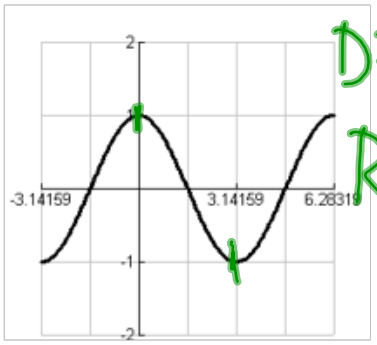
$\sin^{-1} x$ (arcsinx)
D: $[-1, 1]$
R: $[-\pi/2, \pi/2]$





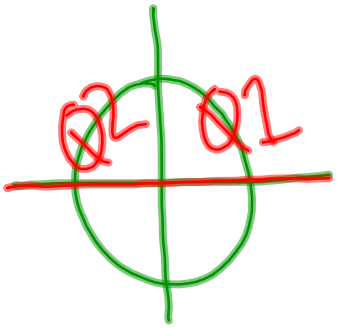
Inverse Cosine

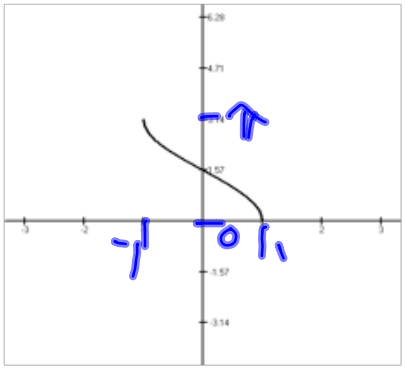
$\cos^{-1} x$



D: $[0, \pi]$

R: $[-1, 1]$





$\cos^{-1} x$

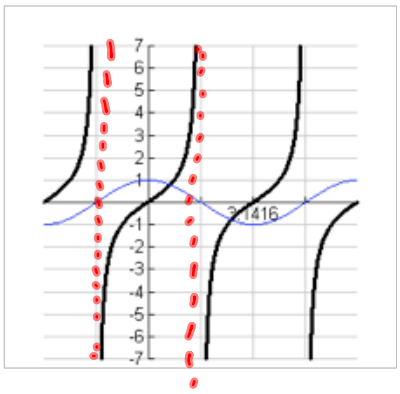
D: $[-1, 1]$

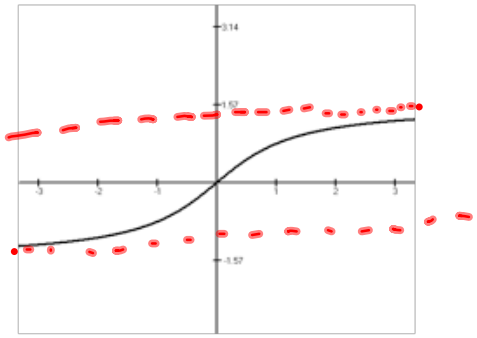
R: $[0, \pi]$

$\cos x = y$

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

Inverse Tangent





$\tan x$

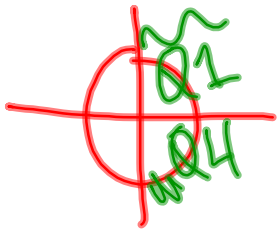
$D: (-\pi/2, \pi/2)$

$R: (-\infty, \infty)$

$\tan^{-1} x$

$D: (-\infty, \infty)$

$R: (-\pi/2, \pi/2)$



$\tan x = y$

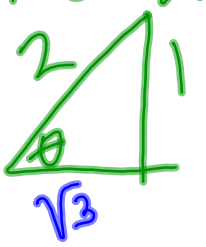
$\tan^{-1} y = x$

Evaluating Inverse Functions

$\sin^{-1}\left(\frac{1}{2}\right)$ D: $[-1, 1]$ R: $[-\pi/2, \pi/2]$

(1) what angle has a sine value of $\frac{1}{2}$ $\boxed{\frac{\pi}{6}}$

(2) $\sin\theta = \frac{1}{2}$ Sin: $\frac{opp}{hyp}$



$\boxed{\frac{\pi}{6}}$

$\sin^{-1}\left(\frac{\pi}{2}\right)$ $\frac{3.14}{2}$

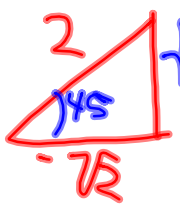
Does not exist

D.N.E.

$$\cos^{-1}\left(-\frac{\sqrt{2}}{2}\right)$$ Q1 & Q2

(1) What angle gives a cosine value of $-\frac{\sqrt{2}}{2}$? $\frac{3\pi}{4}$

(2) $\cos\theta = -\frac{\sqrt{2}}{2}$ $\cos = \frac{adj}{hyp}$



$(\sqrt{2})^2 + b^2 = 4$

$2 + b^2 = 4$

$b^2 = 2$

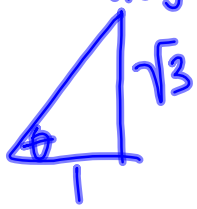
$b = \sqrt{2}$

$\frac{3\pi}{4}$

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

(1) What angle gives a tangent value of $\sqrt{3}$? $\frac{\pi}{3}$

(2) $\tan = \frac{opp}{adj}$



$\frac{\pi}{3}$

Use your calculator in radian mode to evaluate this inverse function

$$\sin^{-1}(-0.81)$$

Use your calculator in degree mode to evaluate this inverse function

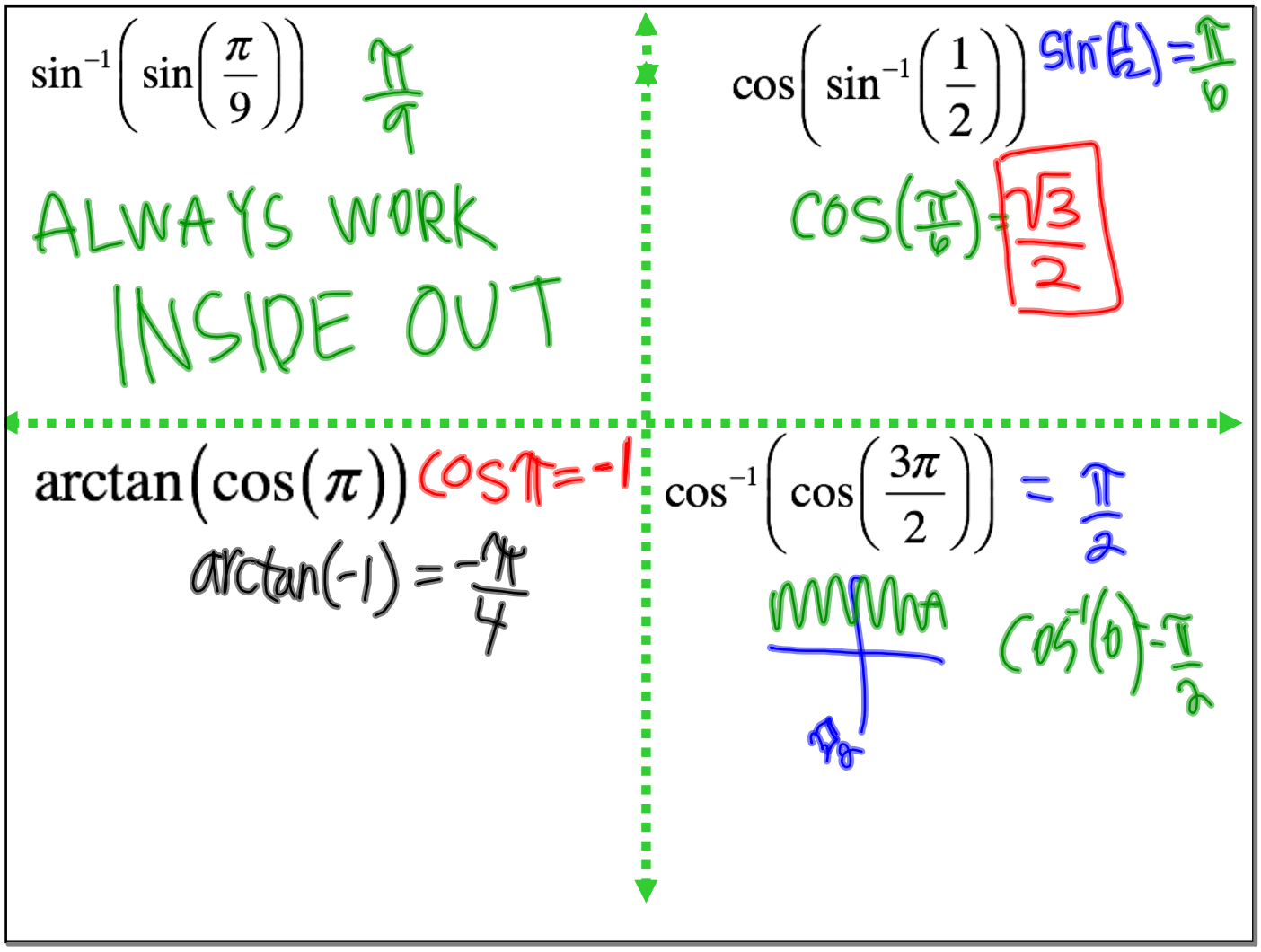
$$\tan^{-1}(22.8)$$

Composing Trigonometric Functions

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

$\arccos(\cos(x)) = x$

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


$\sin^{-1}\left(\sin\left(\frac{\pi}{9}\right)\right)$
$\frac{\pi}{9}$
ALWAYS WORK
INSIDE OUT
$\cos\left(\sin^{-1}\left(\frac{1}{2}\right)\right)$
$\sin\left(\frac{\pi}{6}\right)=\frac{1}{2}$
$\cos\left(\frac{\pi}{6}\right)=\frac{\sqrt{3}}{2}$
$\arctan(\cos(\pi))$
$\cos\pi=-1$
$\arctan(-1)=-\frac{\pi}{4}$
$\cos^{-1}\left(\cos\left(\frac{3\pi}{2}\right)\right)=\frac{\pi}{2}$
$\cos^{-1}(0)=\frac{\pi}{2}$