

$$d = \frac{2 + -2}{2}$$

$$d = \frac{0}{2} = 0$$

Warm-up  
 PS =  $-\frac{\pi}{4} = \frac{\pi}{4}$   
 March 21, 2017

$$\text{max} = 2$$

$$\text{min} = -2$$

$$\text{PS} = 0$$

C = 0, no shift  
 Write the equation of the graph.

$$\text{per} = \frac{2\pi}{|b|}$$

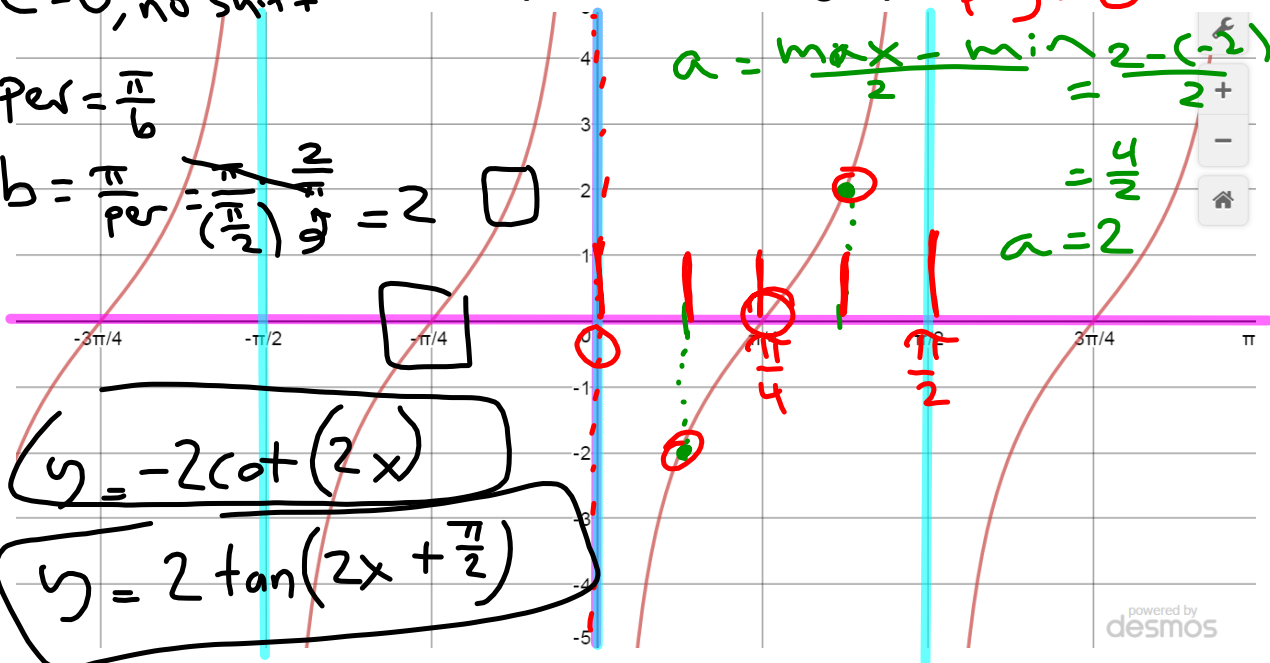
$$b = \frac{2\pi}{\frac{\pi}{2}} = 4$$

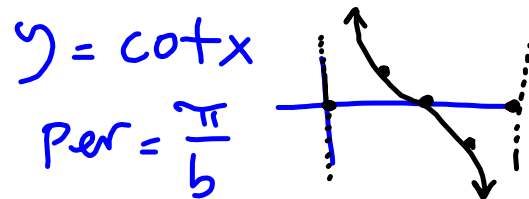
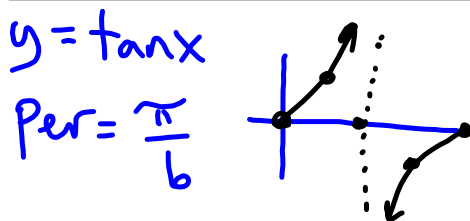
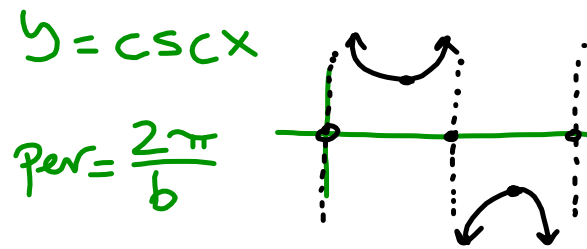
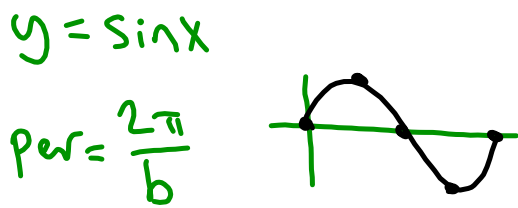
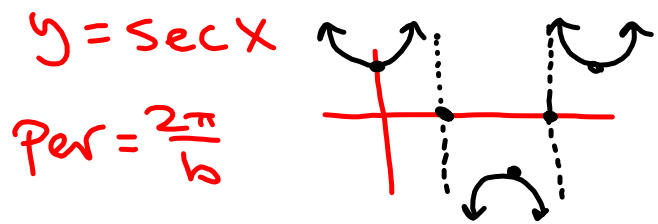
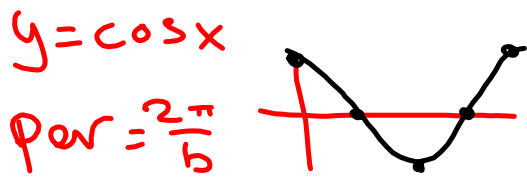
$$a = \frac{\text{max} - \text{min}}{2} = \frac{2 - (-2)}{2} = 2$$

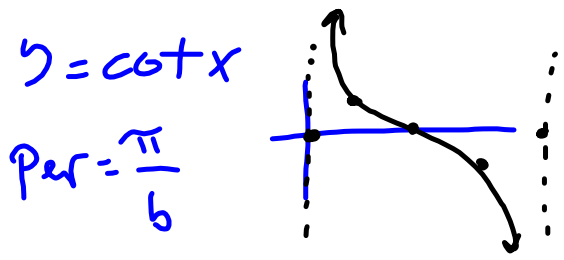
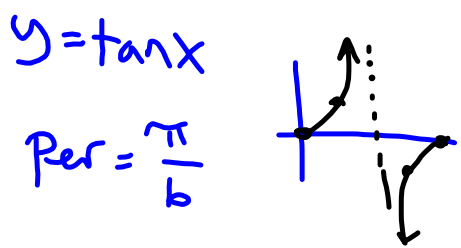
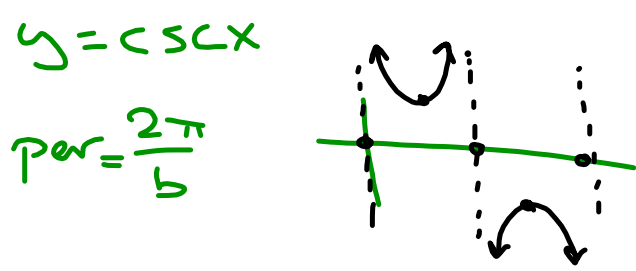
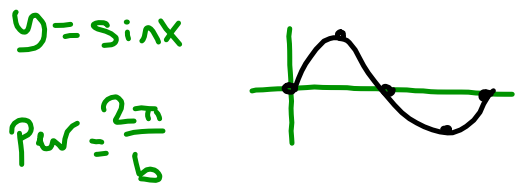
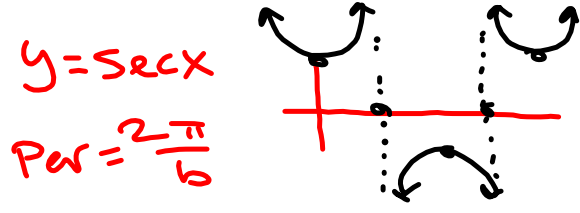
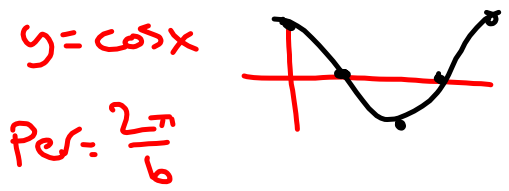
$$a = 2$$

$$y = -2 \cot(2x)$$

$$y = 2 \tan(2x + \frac{\pi}{2})$$







	Domain	Range
$y = \cos(x)$	$(-\infty, \infty)$	$[-1, 1]$
$y = \sin(x)$	$(-\infty, \infty)$	$[-1, 1]$
$y = \tan(x)$	X / asy	$(-\infty, \infty)$

	Domain	Range
$y = \cos^{-1}(x)$	$[-1, 1]$	$[0^\circ, 180^\circ]$
$y = \arccos(x)$		$[0, \pi]$
$y = \sin^{-1}(x)$	$[-1, 1]$	$[-90^\circ, 90^\circ]$
$y = \arcsin(x)$		$[-\frac{\pi}{2}, \frac{\pi}{2}]$
$y = \tan^{-1}(x)$	$(-\infty, \infty)$	$(-90^\circ, 90^\circ)$
$y = \arctan(x)$		$(-\frac{\pi}{2}, \frac{\pi}{2})$

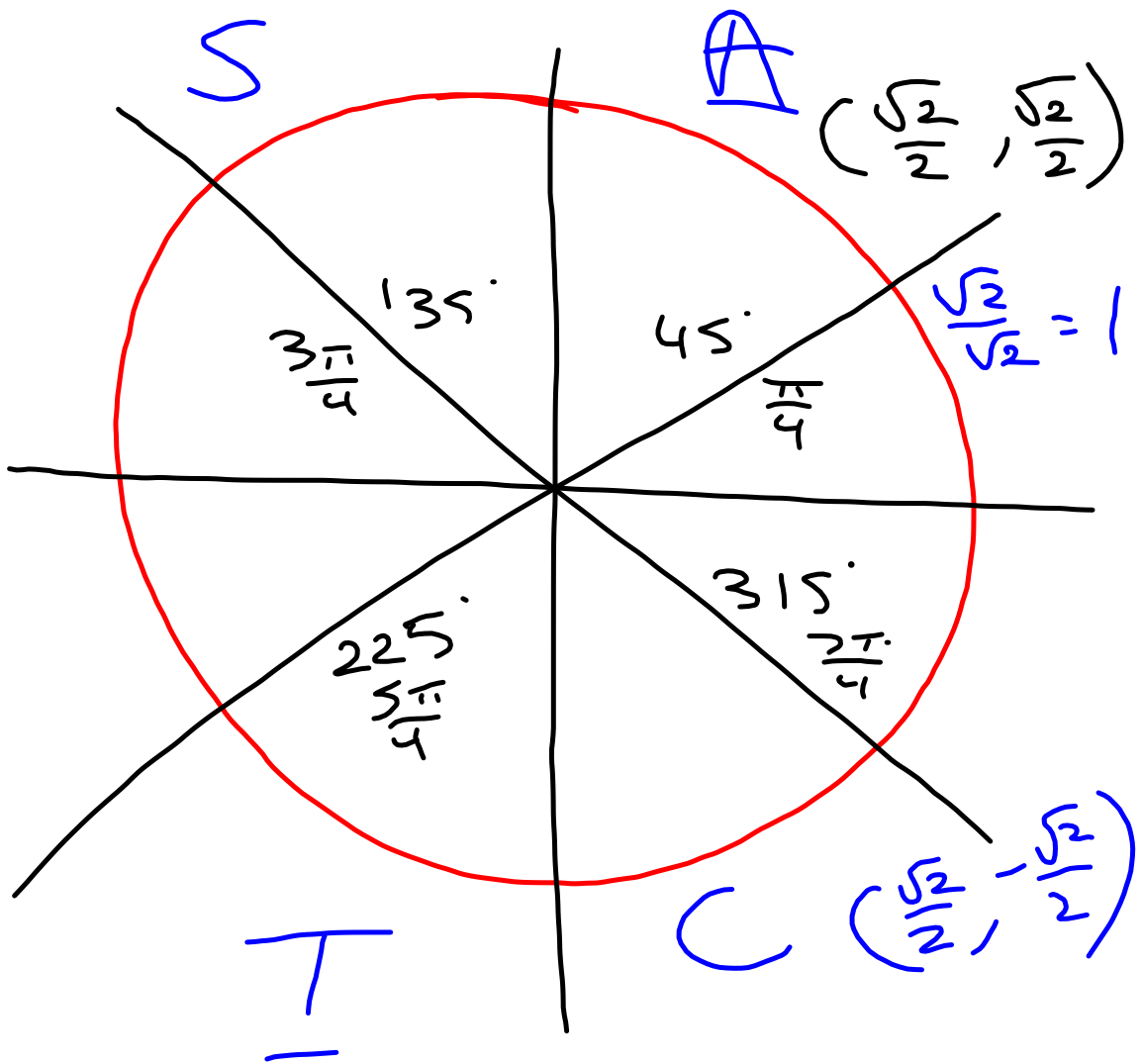
**Reciprocal: Flip**

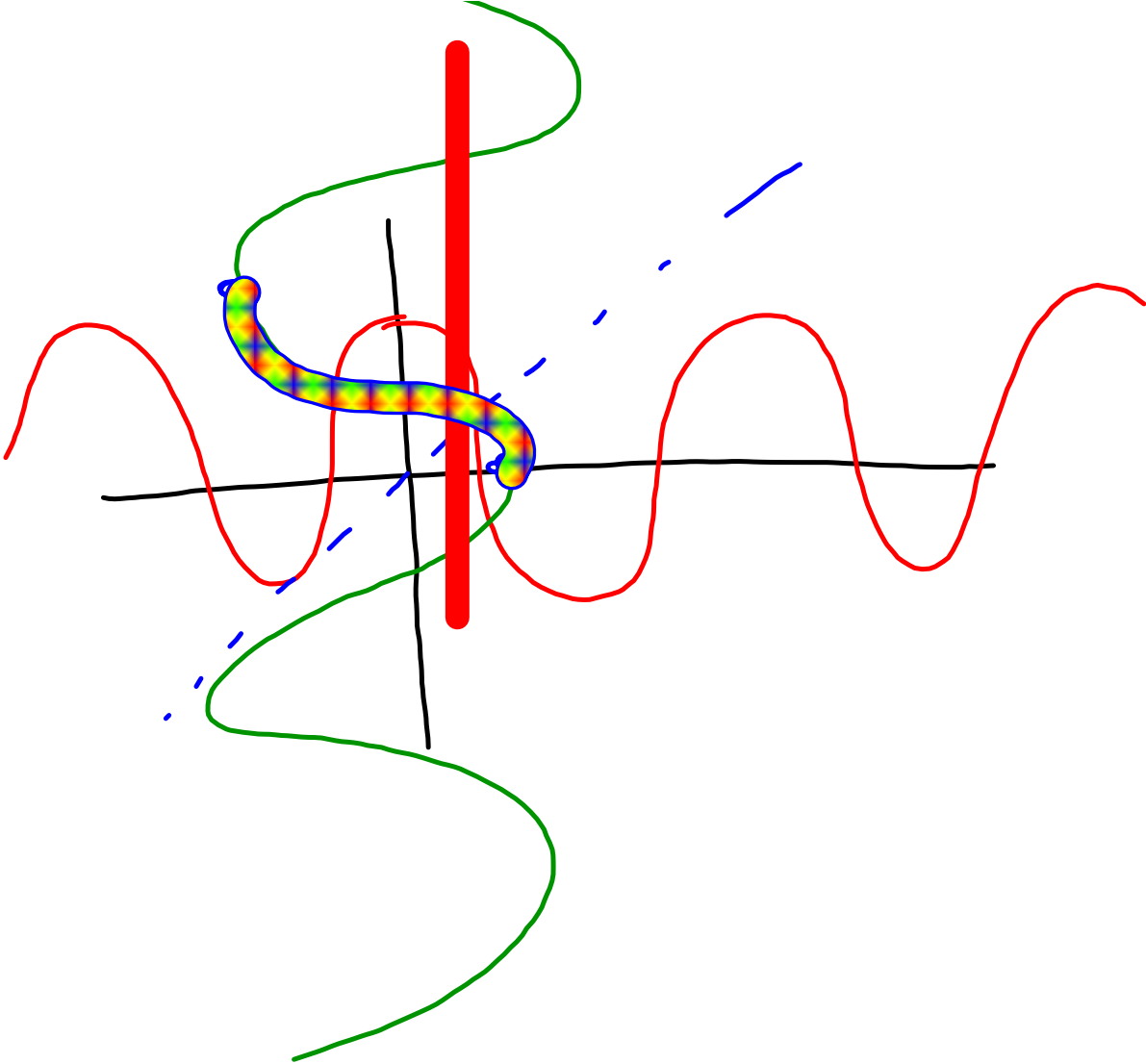
**Inverse: Opposite, Switch**

① 2 angles,  $0 \leq \theta < 2\pi$

~~$\tan^{-1}(1)$~~   $(\tan \theta) = 1$   
 $\tan^{-1}(1)$

$$\theta = \frac{\pi}{4}, \frac{5\pi}{4}$$



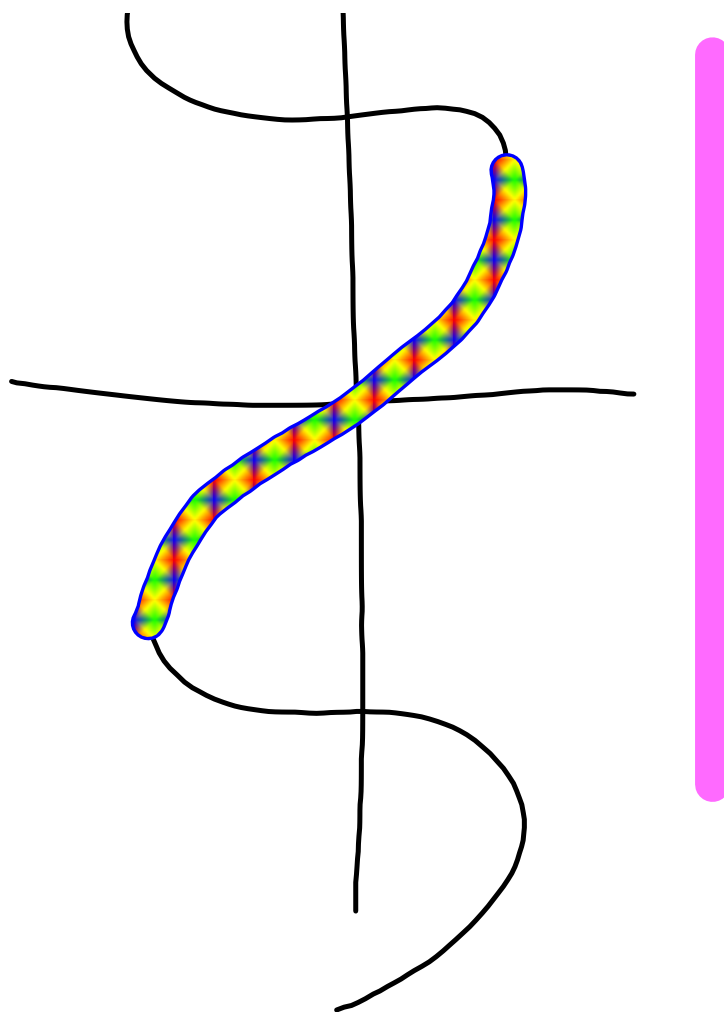




$$(-\infty, -1] \cup [1, \infty)$$

$$y = \sec x$$

Reciprocal



$$\cancel{\tan^{-1}(\tan \theta)} = \tan^{-1}(1) \quad (0, 2\pi)$$

$$\theta = \frac{\pi}{4}, \frac{5\pi}{4}$$

$$\cancel{\tan^{-1}}(\tan \theta) = \tan^{-1}(-2.9577) \quad [0, 360)$$

$$\theta = -71.3$$

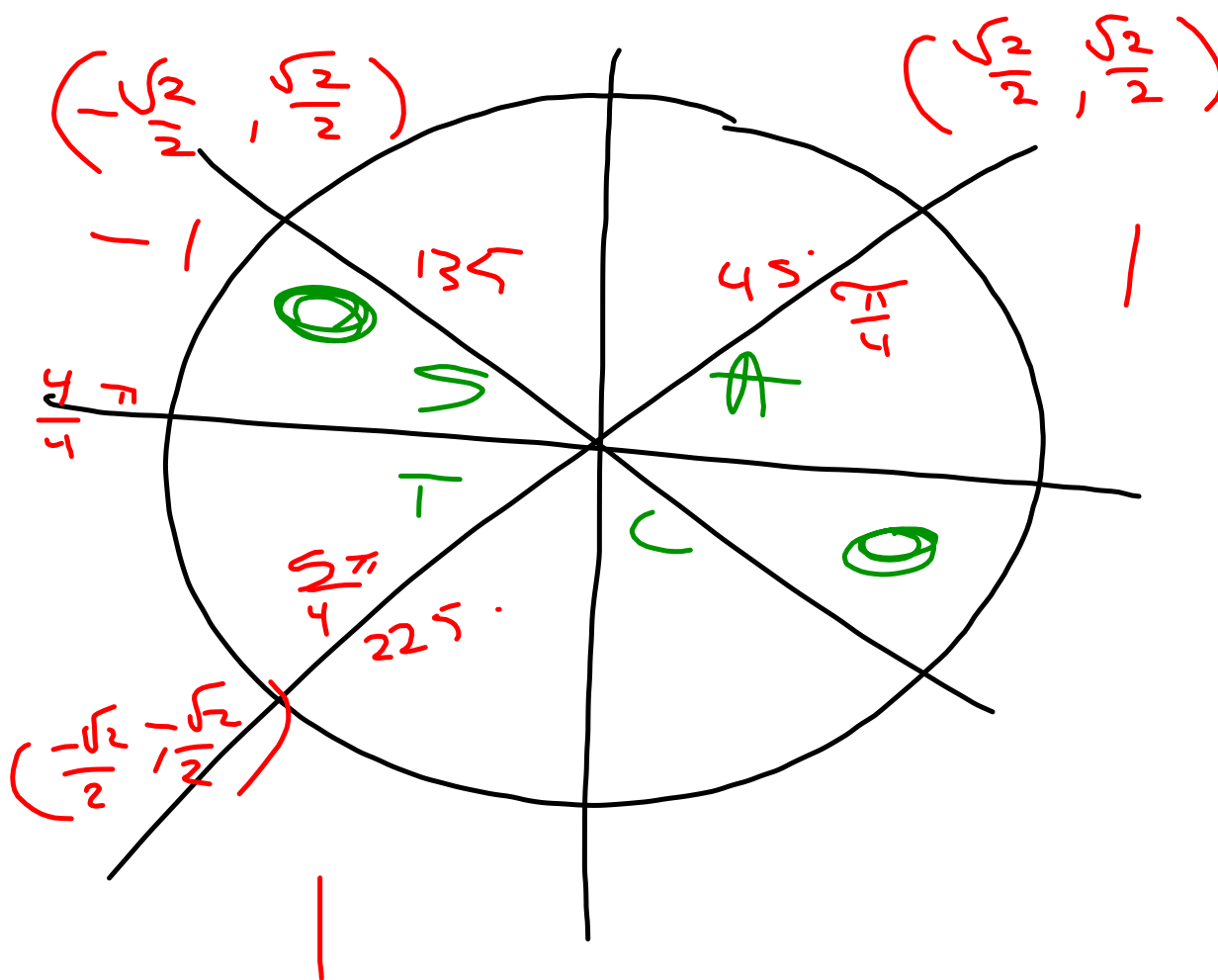
$$+360$$

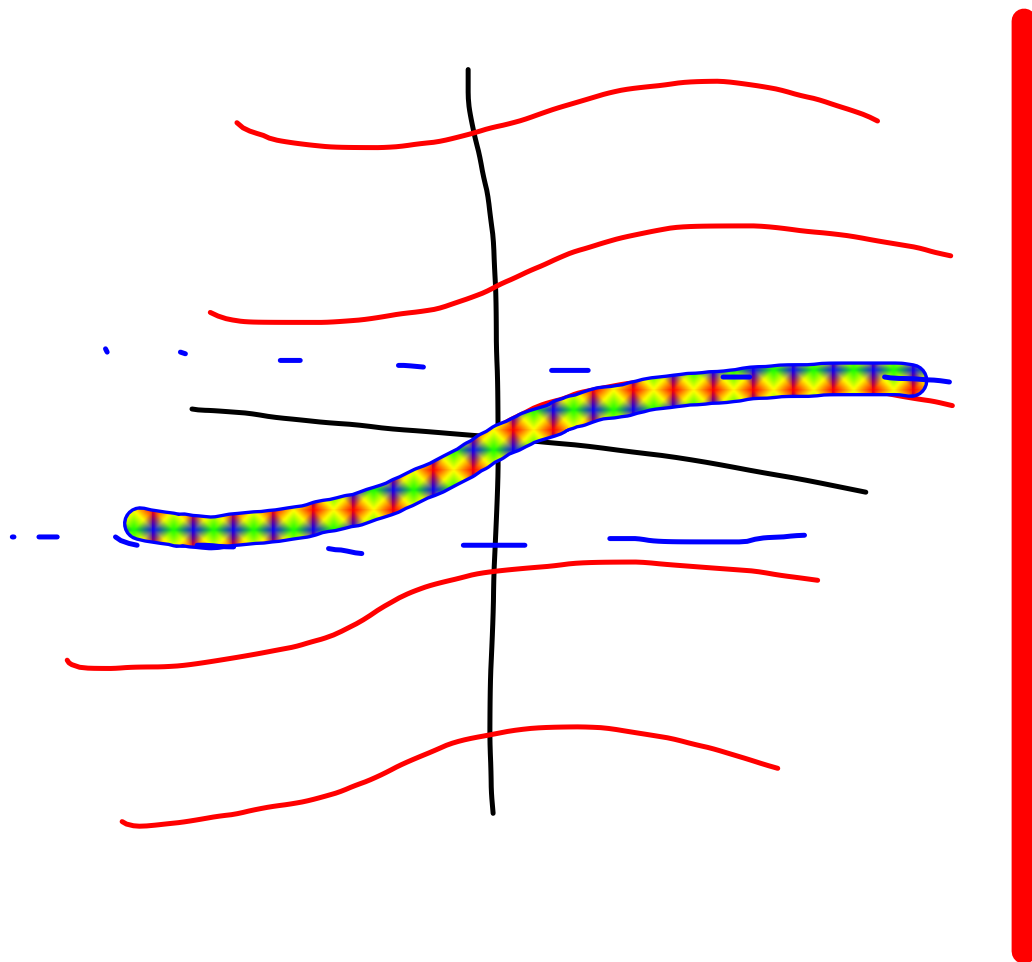
IV

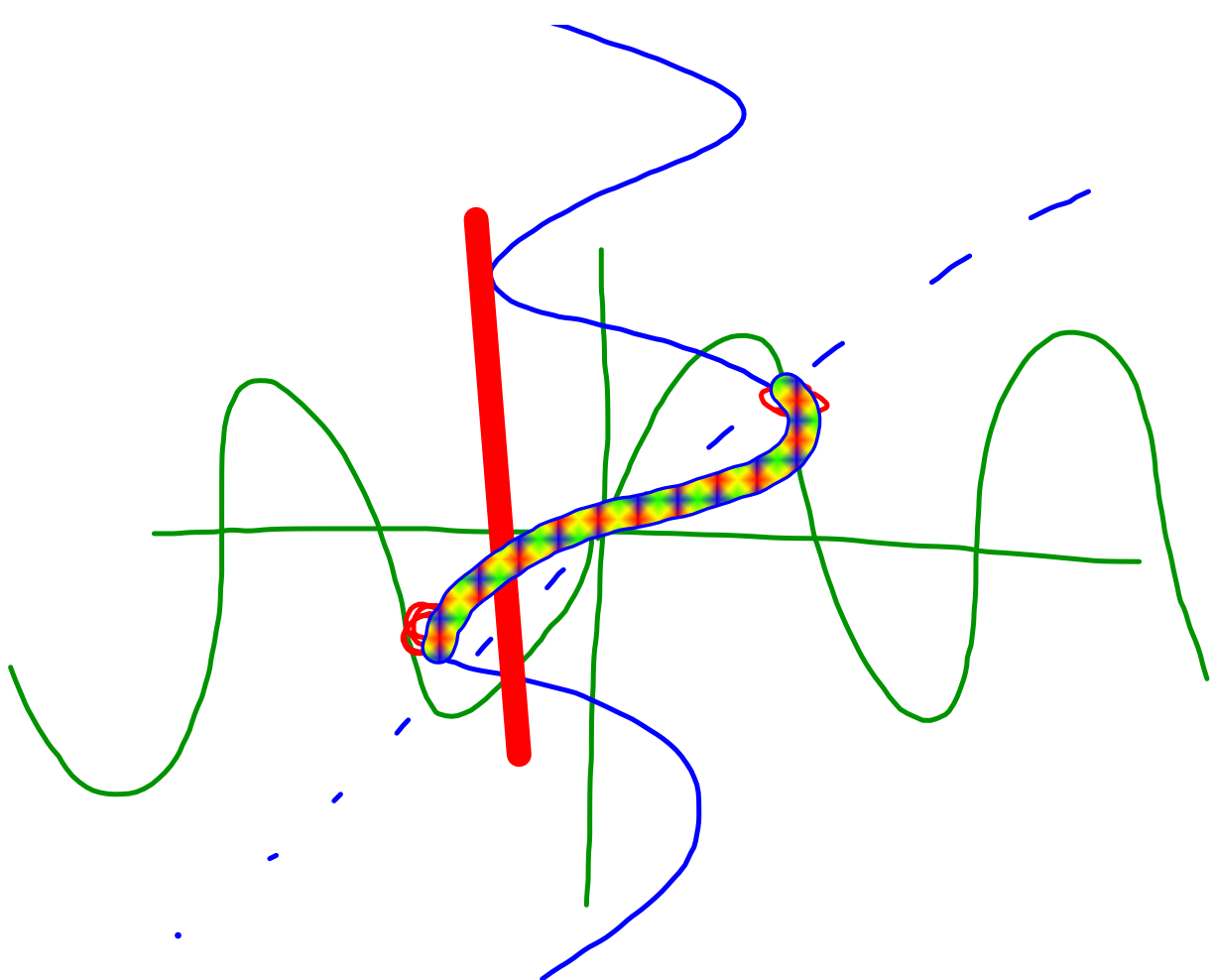
$$288.7^\circ$$

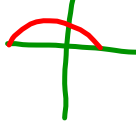
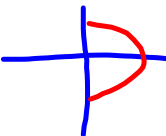
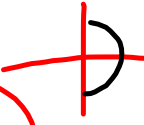
II

$$180 - 71.3 = 108.7^\circ$$



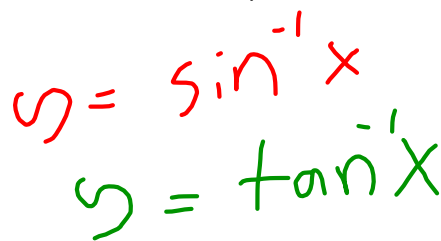
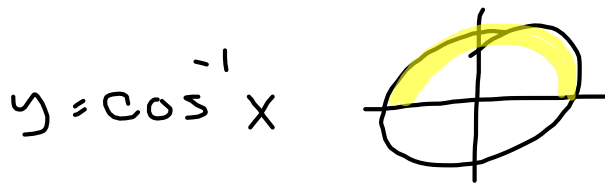




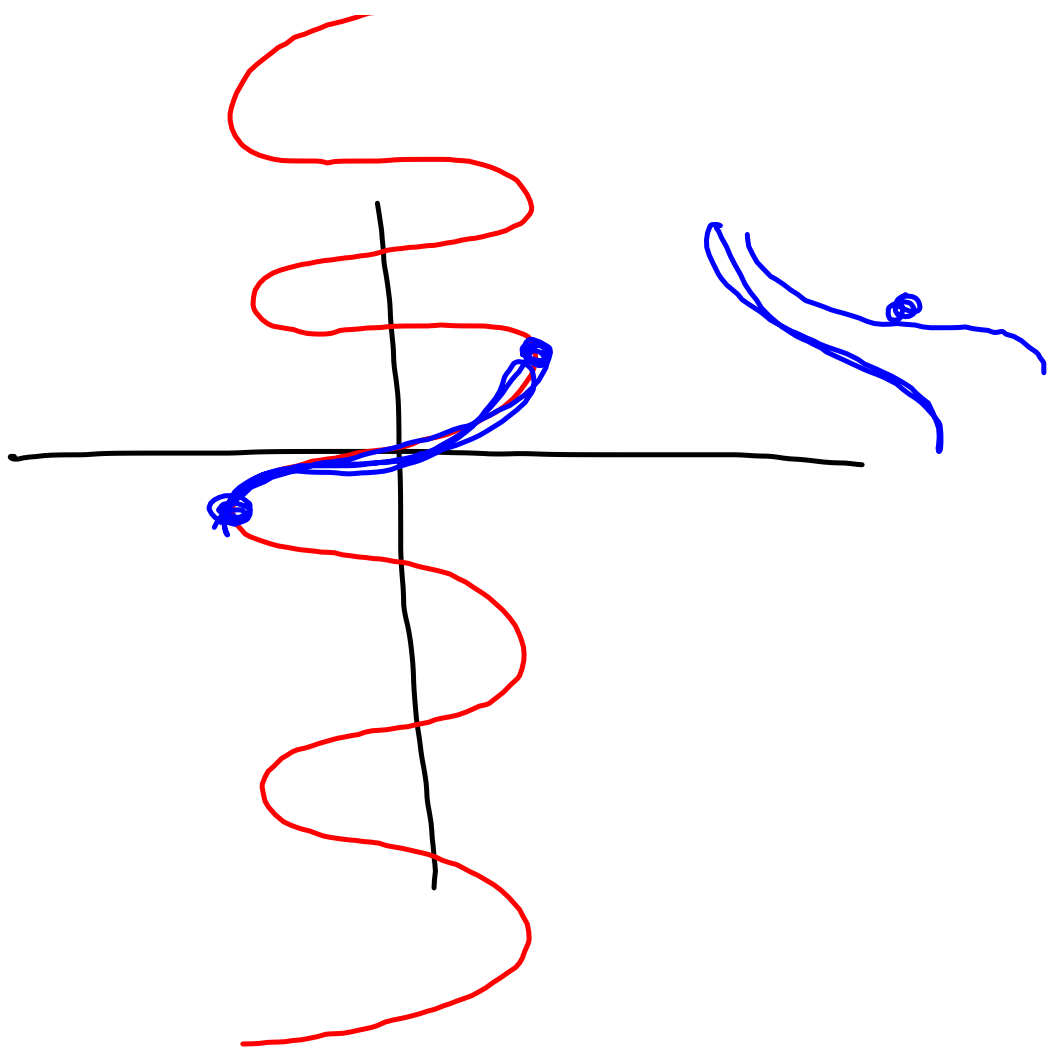
	Domain	Range
$\cos^{-1}(x)$ $\arccos(x)$	$[-1, 1]$	$[0^\circ, 180^\circ]$ or $[0, \pi]$ 
$\sin^{-1}(x)$ $\arcsin(x)$	$[-1, 1]$	$[-90^\circ, 90^\circ]$ or $[-\frac{\pi}{2}, \frac{\pi}{2}]$ 
$\tan^{-1}(x)$ $\arctan(x)$	$\mathbb{R}$	$(-90^\circ, 90^\circ)$ or $(-\frac{\pi}{2}, \frac{\pi}{2})$ 

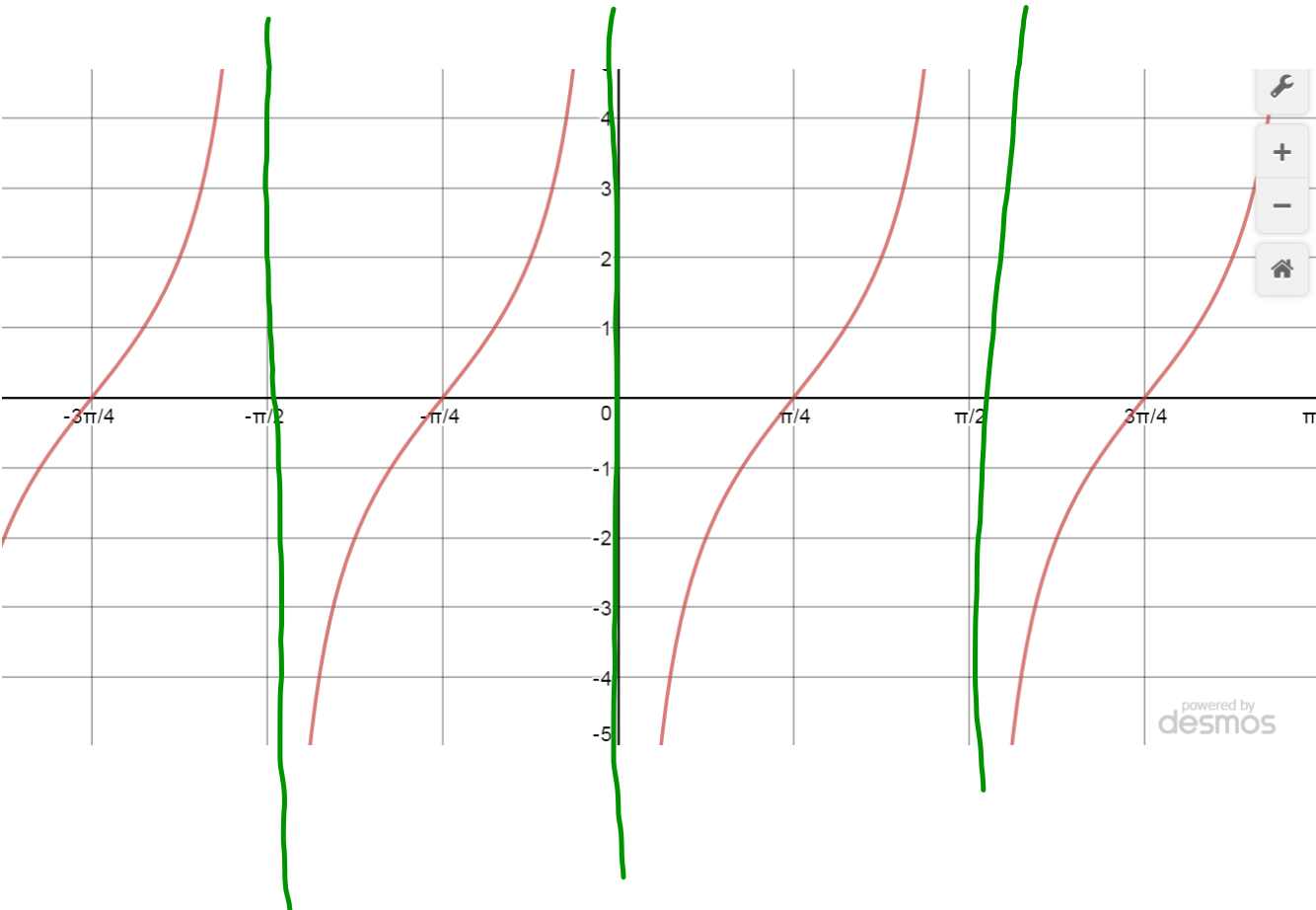


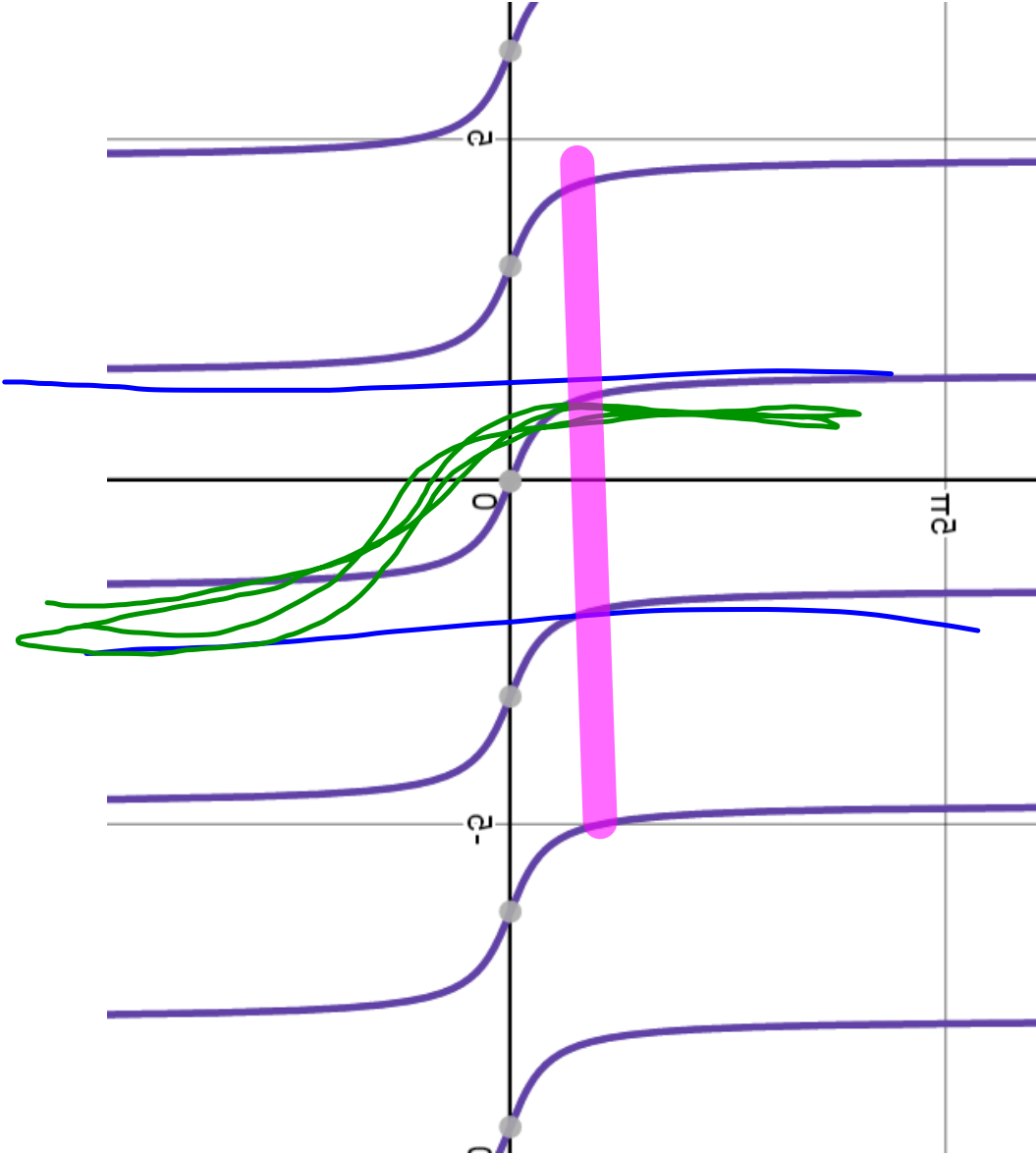
	Domain	Range
$y = \cos^{-1}(x)$ arccos(x)	$[-1, 1]$	$[0, \pi]$ $[0, 180]$
$y = \sin^{-1}(x)$ arcsin(x)	$[-1, 1]$	$[-\frac{\pi}{2}, \frac{\pi}{2}]$ $[-90, 90]$
$y = \tan^{-1}(x)$ arctan(x)	$(-\infty, \infty)$	$(-\frac{\pi}{2}, \frac{\pi}{2})$ $(-90, 90)$



	Domain	Range
$y = \cos(x)$	$(-\infty, \infty)$	$[-1, 1]$
$y = \sin(x)$	$(-\infty, \infty)$	$[-1, 1]$
$y = \tan(x)$	$x \neq \text{asy}$	$(-\infty, \infty)$





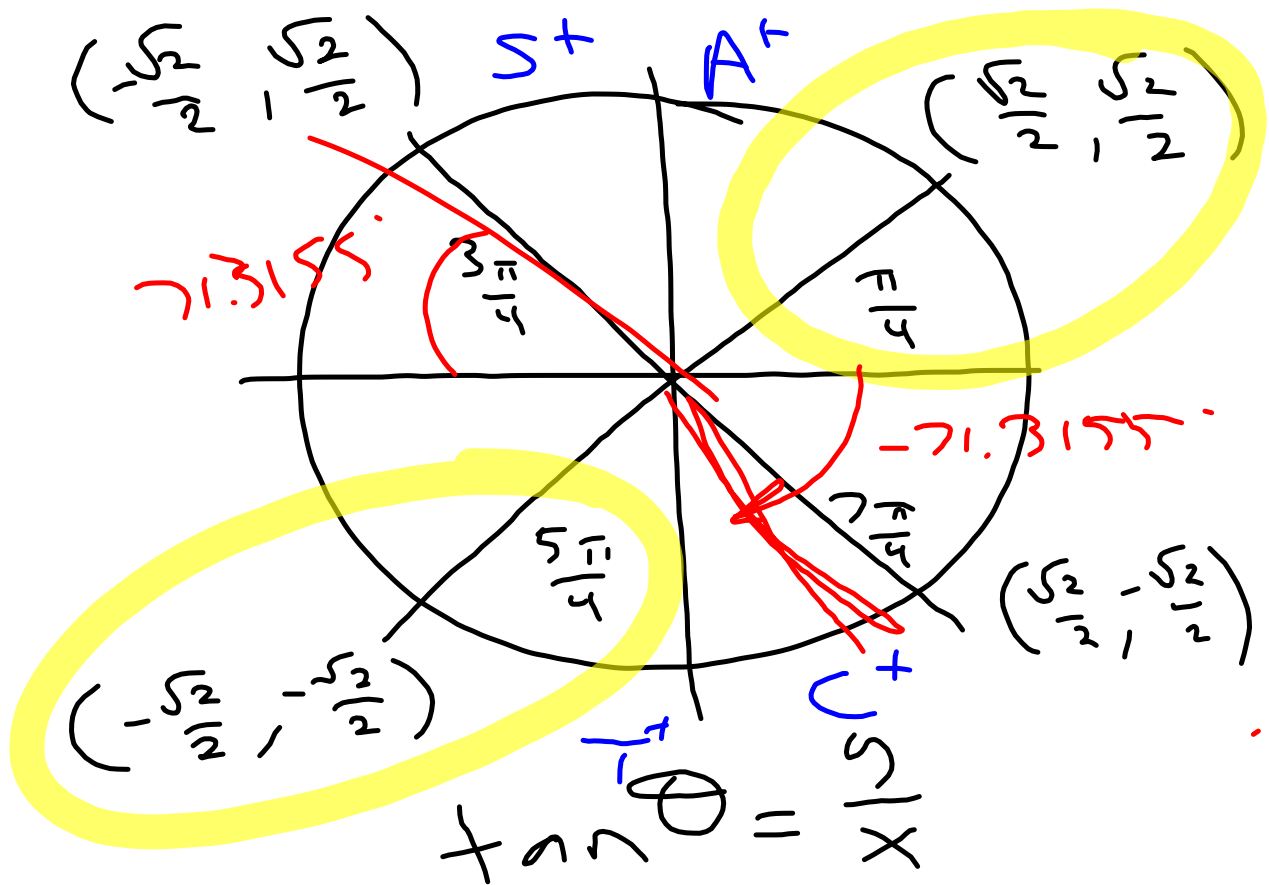


$$\textcircled{1} \quad \tan \theta = 1$$

$$\frac{\pi}{4}, \quad \frac{5\pi}{4}$$

If you evaluate,

Choose  $\frac{\pi}{4}$



$$\tan(288.6809) = -2.9577$$

$$② \quad 0^\circ \leq \theta < 360^\circ$$

$$\cancel{\tan} \theta = \tan^{-1}(-2.9577)$$

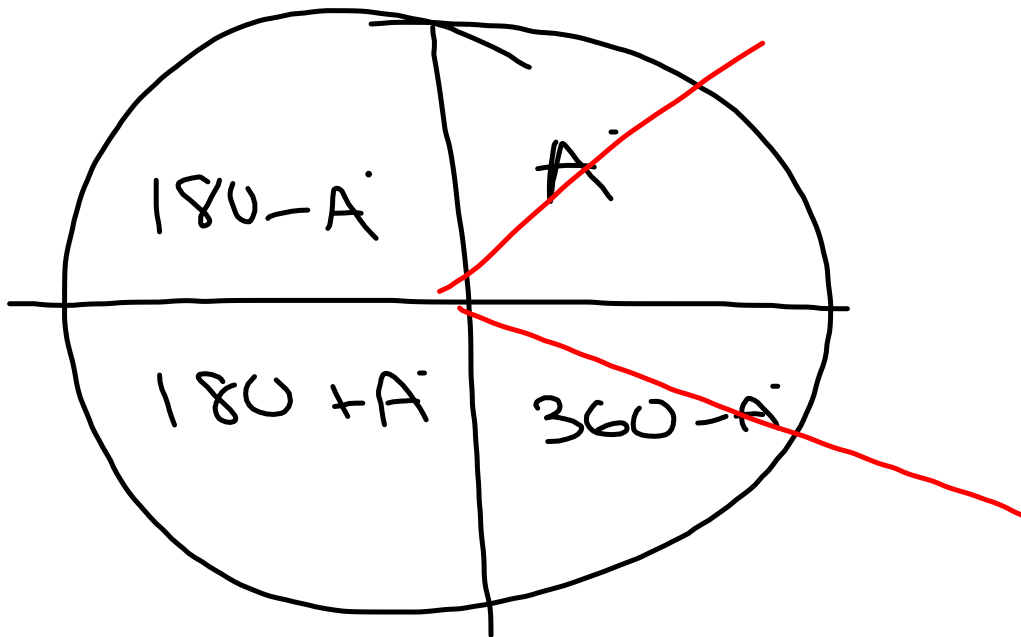
$$\theta = -71.3155^\circ + 360$$

$$\underline{\text{IV}}: 288.6804^\circ$$

$$\underline{\text{II}}: 180 - 71.3155$$

$$= 108.6845^\circ$$





$$\textcircled{3} \quad 0 \leq \theta < 360$$
$$\cos^{-1}(\cos \theta) = (.4537)$$

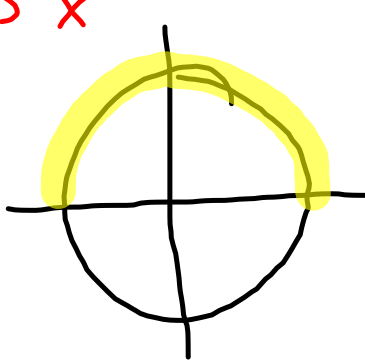
$$\theta = 63.0186^\circ$$

$$\text{I} : 63.0186$$

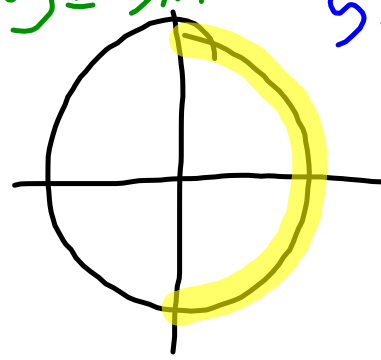
$$\underline{\text{II}} : 360 - 63.0186$$
$$296.9814$$

	Domain	Range
$\arccos$ $y = \cos^{-1} x$	$[-1, 1]$	$[0, \pi]$
$\arcsin$ $y = \sin^{-1} x$	$[-1, 1]$	$[-\frac{\pi}{2}, \frac{\pi}{2}]$
$\arctan$ $y = \tan^{-1} x$	$(-\infty, \infty)$	$(-\frac{\pi}{2}, \frac{\pi}{2})$

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



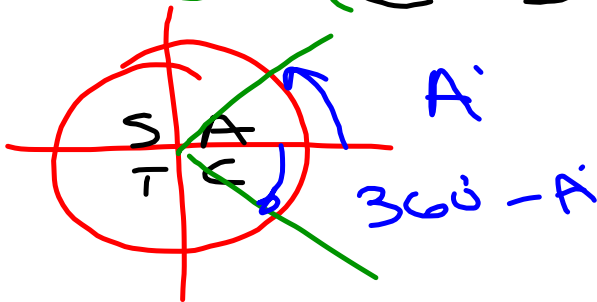
$y = \sin^{-1} x$        $y = \tan^{-1} x$



③

$$0 \leq \theta < 360$$

$$\cos^{-1}(\cos \theta) = (0.4537)$$

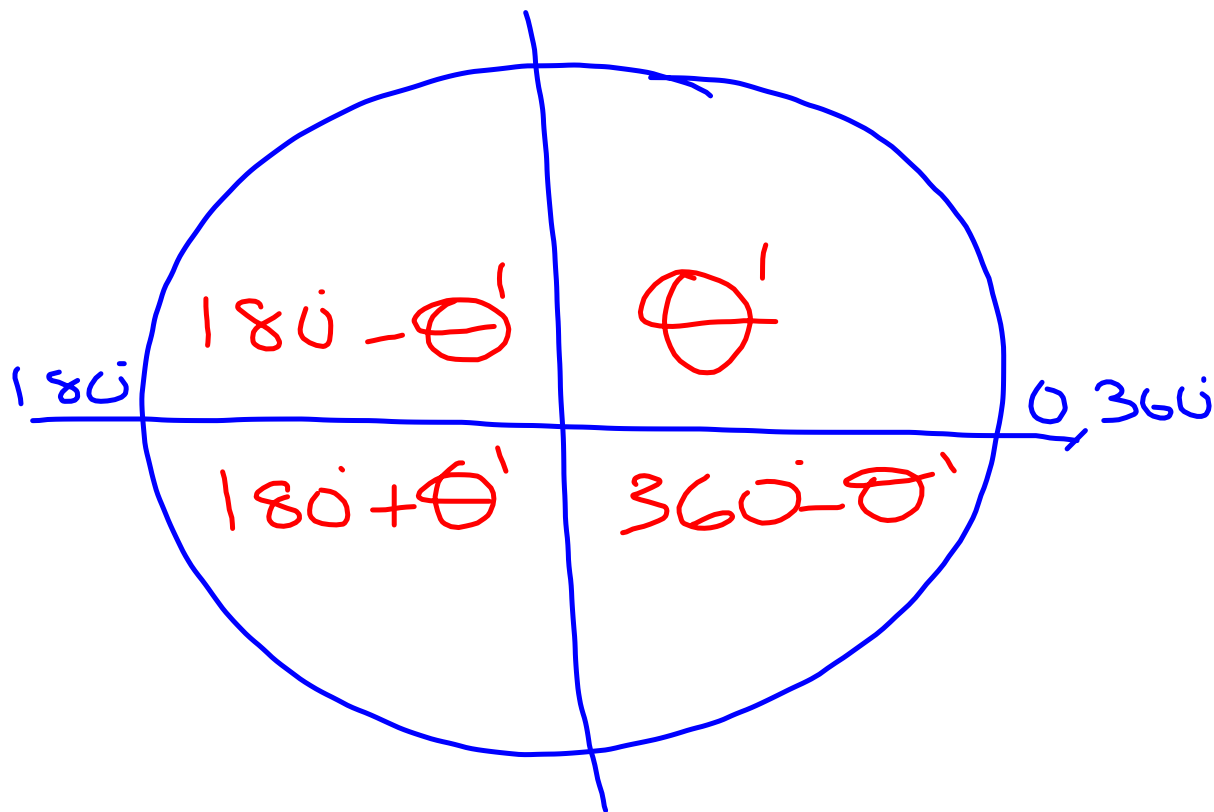


$$\theta = 63.0187^\circ$$

$$\text{I: } 63.0187^\circ$$

$$\text{IV: } 360 - 63.0187$$

$$296.9813^\circ$$



$\theta$  = angle  
 $\theta'$  = reference angle

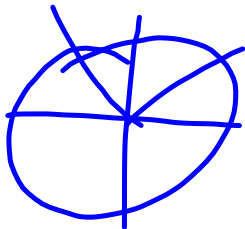
$$0 < \theta < 360$$

$$\frac{1}{\csc \theta} = \frac{1}{1.88}$$

$$\sin(\theta) = \frac{1}{\csc \theta} = \left( \frac{1}{1.88} \right)$$

$\sin^{-1}$

$$\theta = 32.1349^\circ$$



$$\text{I: } 32.1349^\circ$$

$$\text{II: } 180 - 32.1349^\circ$$

$$= 147.8650^\circ$$

⑤

$$0^\circ \leq \theta < 360^\circ$$

$$\sin \theta = .66\bar{6}$$



$$\sin^{-1} \left( \sin \theta \right) = \left( \frac{2}{3} \right)$$

$$\theta = 41.8103^\circ$$

$$\text{I: } 41.8103^\circ$$

$$\text{II: } 180 - 41.8103$$

$$= 138.1897^\circ$$

④

$$0 \leq \theta < 2\pi$$



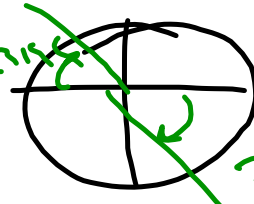
$$\sin \theta = -\frac{\sqrt{2}}{2}$$

$$\theta = \frac{5\pi}{4}, \frac{7\pi}{4}$$



②

$$0^\circ \leq \theta < 360^\circ$$

~~$$\tan \theta = (-2.9577)$$
~~

$$\theta = -71.3196^\circ$$

$$\text{IV} : 360 - 71.3196$$

$$= 288.68^\circ$$

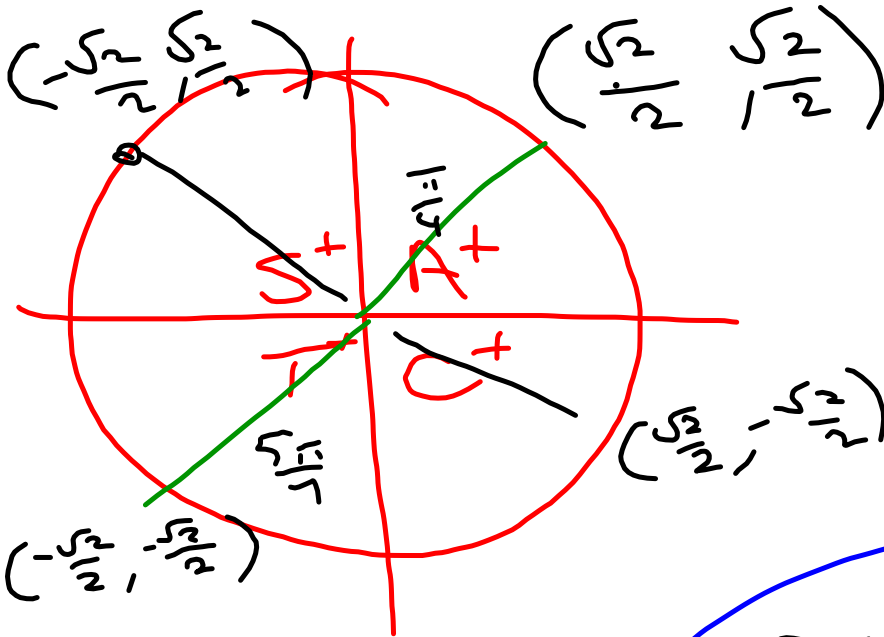
$$\text{II} : 180 - 71.3196$$

$$= 108.68^\circ$$

①

$$\tan \theta = 1$$

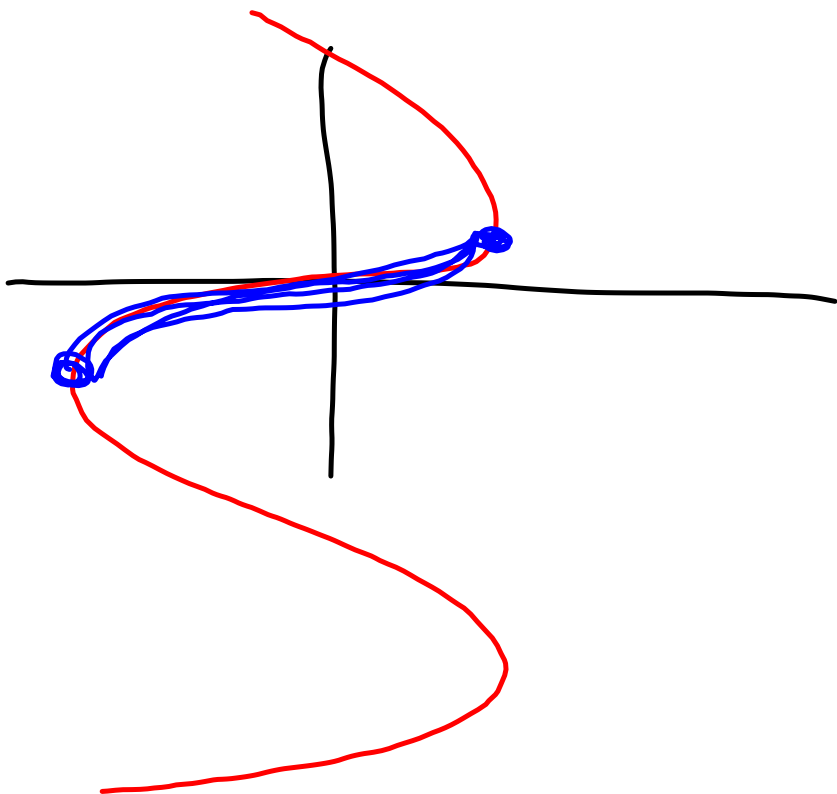
$$0 \leq \theta < 2\pi$$



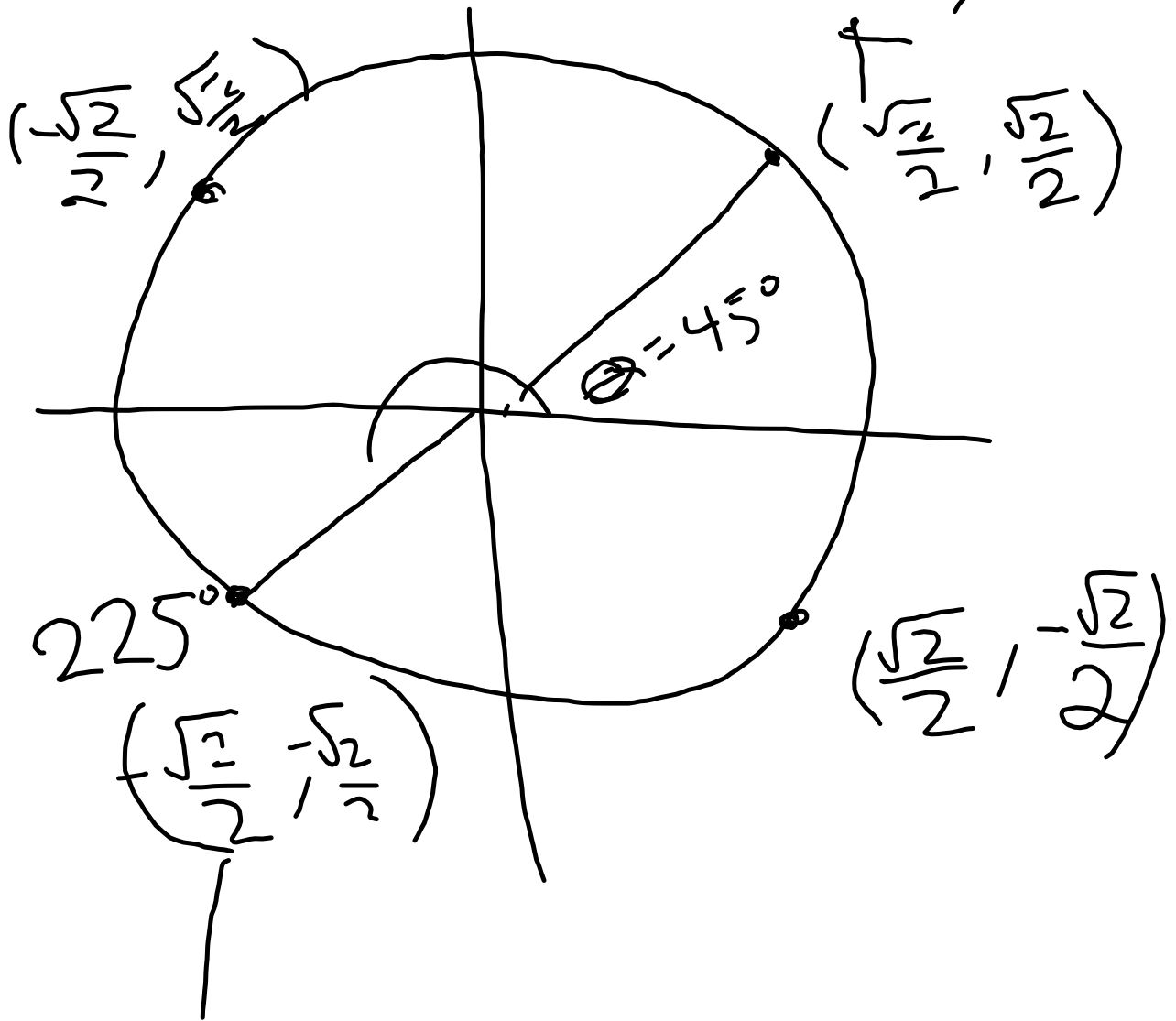
$$\tan \theta = \frac{y}{x}$$

$$\frac{\sqrt{5}}{4}, \frac{\sqrt{5}}{4}$$

	Domain	Range
$y = \cos x$	$(-\infty, \infty)$	$[-1, 1]$
$y = \sin x$	$(-\infty, \infty)$	$[-1, 1]$
$y = \tan x$	$x \neq \text{asy}$	$(-\infty, \infty)$

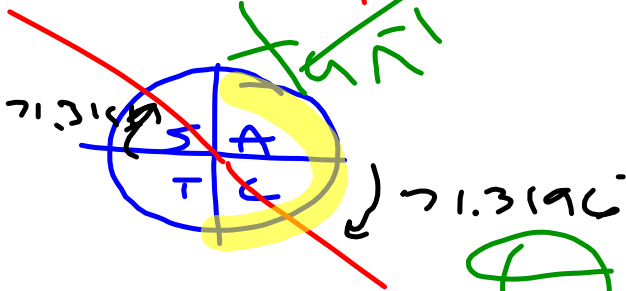


①  $\tan \theta = 1$   $\frac{y}{x}$



②  $0^\circ \leq \theta < 360^\circ$

$\tan \theta = (-2.957)$



$\theta = -71.3196^\circ$

IV:  $360 - A$   
 $360 - 71.3196$   
 $= 288.68^\circ$

II:  $180 - A$   
 $180 - 71.3196$   
 $= 108.68^\circ$

$$A^\circ < 90^\circ$$

