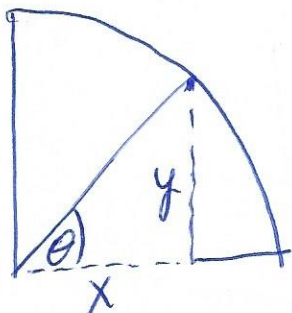


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$$\sin(\theta) = y, \quad \cos(\theta) = x$$

$$\tan(\theta) = \frac{\sin(\theta)}{\cos(\theta)} = \frac{y}{x}$$

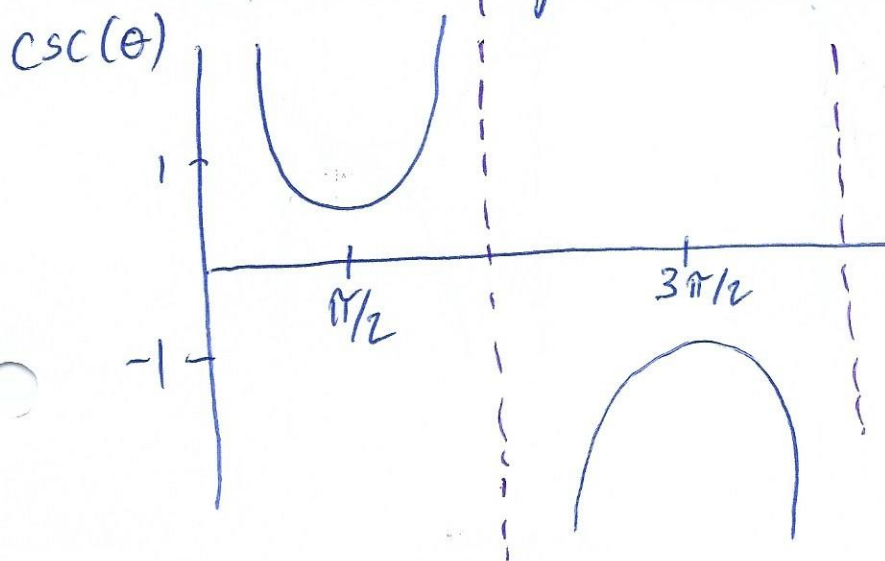
$$\csc(\theta) = \frac{1}{\sin(\theta)}, \quad \sec \theta = \frac{1}{\cos(\theta)}$$

$$\cot(\theta) = \frac{1}{\tan(\theta)}$$

For the sine function: domain: $[-\pi/2, \pi/2]$
range: $[-1, 1]$

For cosine: domain: $[0, \pi]$
range: $[-1, 1]$

For tangent: domain: $[-\pi/2, \pi/2]$
range: $(-\infty, \infty)$



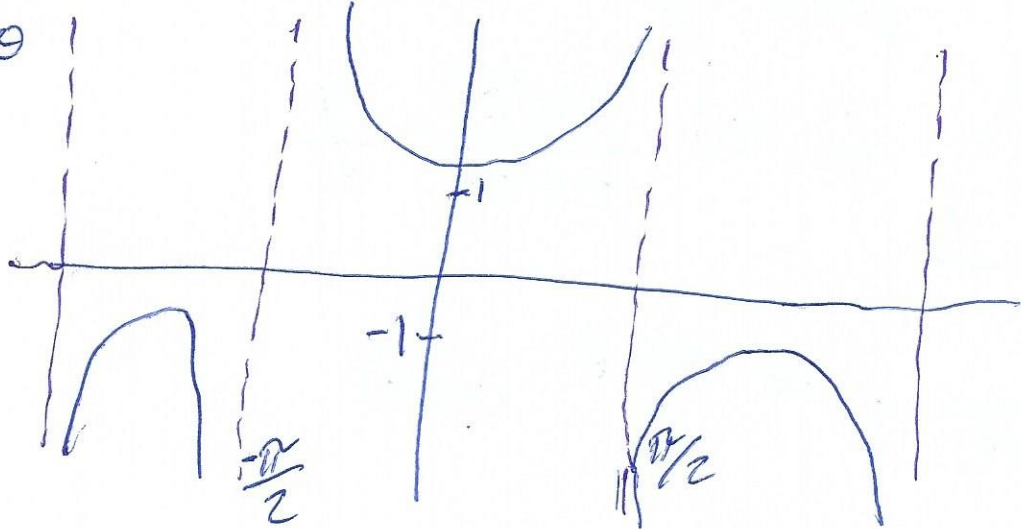
For $\csc(\theta)$:

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

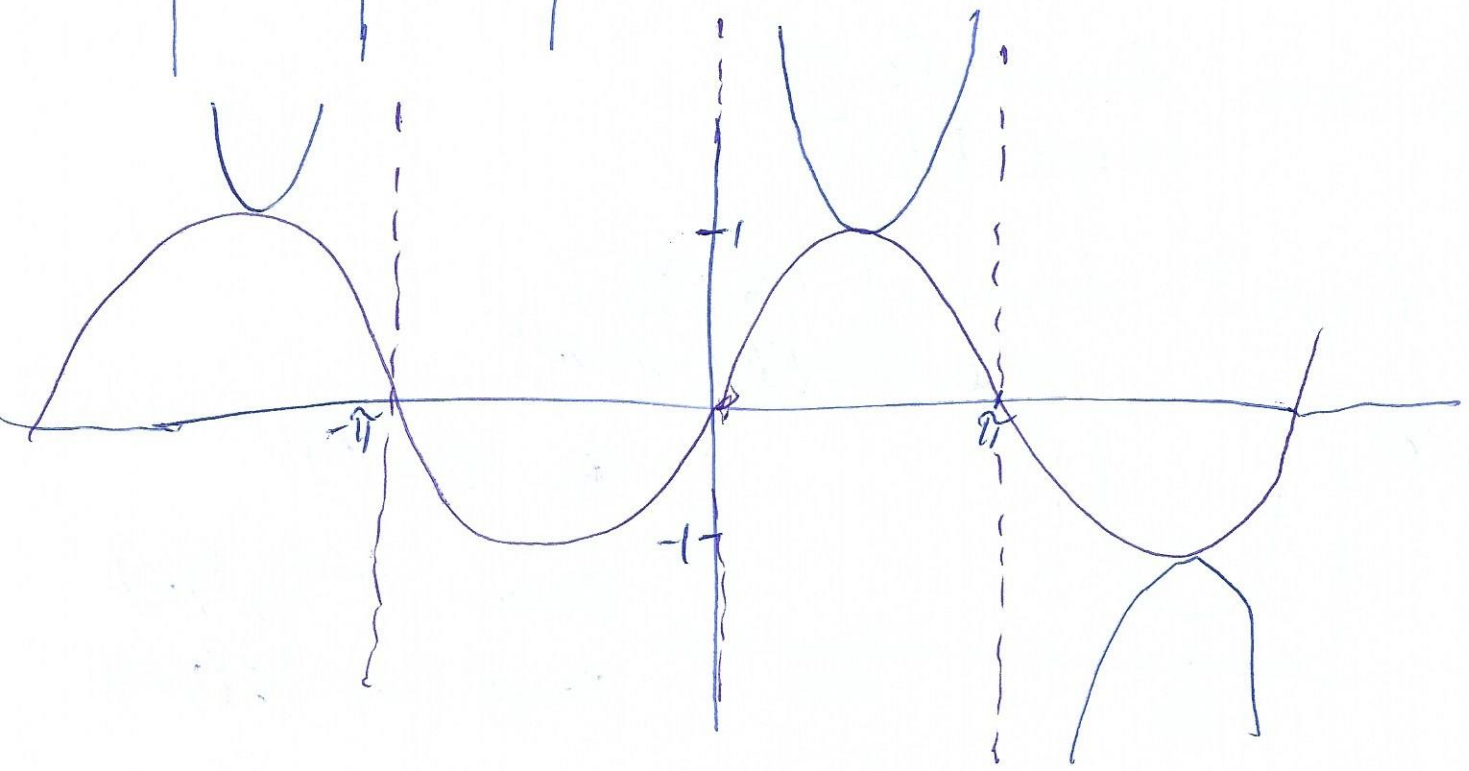
Range: $(-\infty, -1) \cup (1, \infty)$

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sec θ

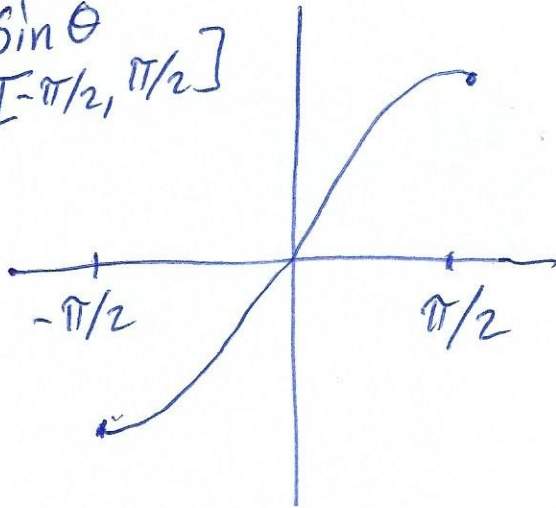


θ	$\sin \theta$	$\frac{1}{\sin \theta}$
$\pi/4$	$\frac{\sqrt{2}}{2}$	$\frac{2}{\sqrt{2}}$
$\pi/6$	$\frac{1}{2}$	2



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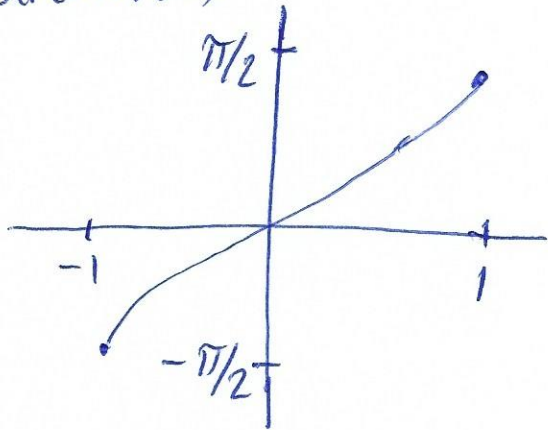
○ $\sin \theta$
on $[-\pi/2, \pi/2]$



$$\sin(\theta) = y$$

~~$\arcsin(\theta) =$~~
 $\arcsin(y) = \theta$

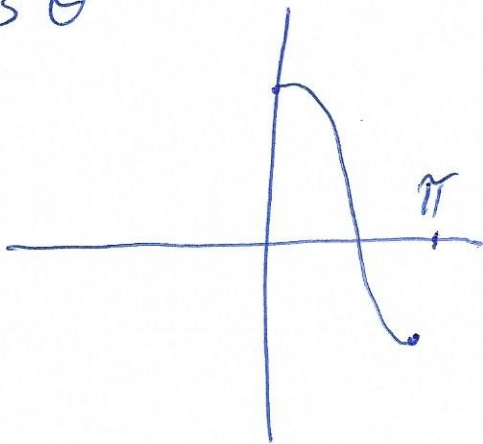
$\arcsin(\theta)$



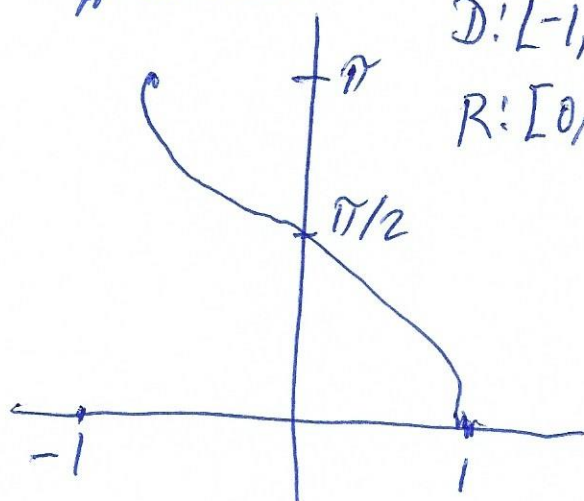
Ex: $\arcsin(1) = \pi/2$

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

$\cos \theta$



$\arccos \theta$



D: $[-1, 1]$
R: $[0, \pi]$

Ex: $\arccos(0) = \pi/2$

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$$\sin(\arccos(0)) = \sin(\pi/2)$$

$$\tan(\arcsin(\sqrt{3}/2)) = \tan(\pi/3) = \frac{\sqrt{3}/2}{1/2} = \sqrt{3}$$