

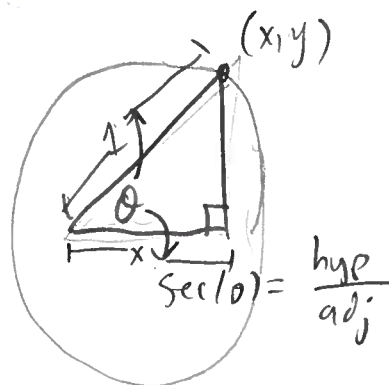
Observations

(1)

Trig funct	Period	Range
$\sin(x)$	2π	$[-1, 1]$
$\cos(x)$	2π	$[-1, 1]$
$\tan(x)$	π	\mathbb{R}

Graph of $\sec(x)$

Recall: $\sec(\theta) = \frac{1}{\cos(\theta)}$

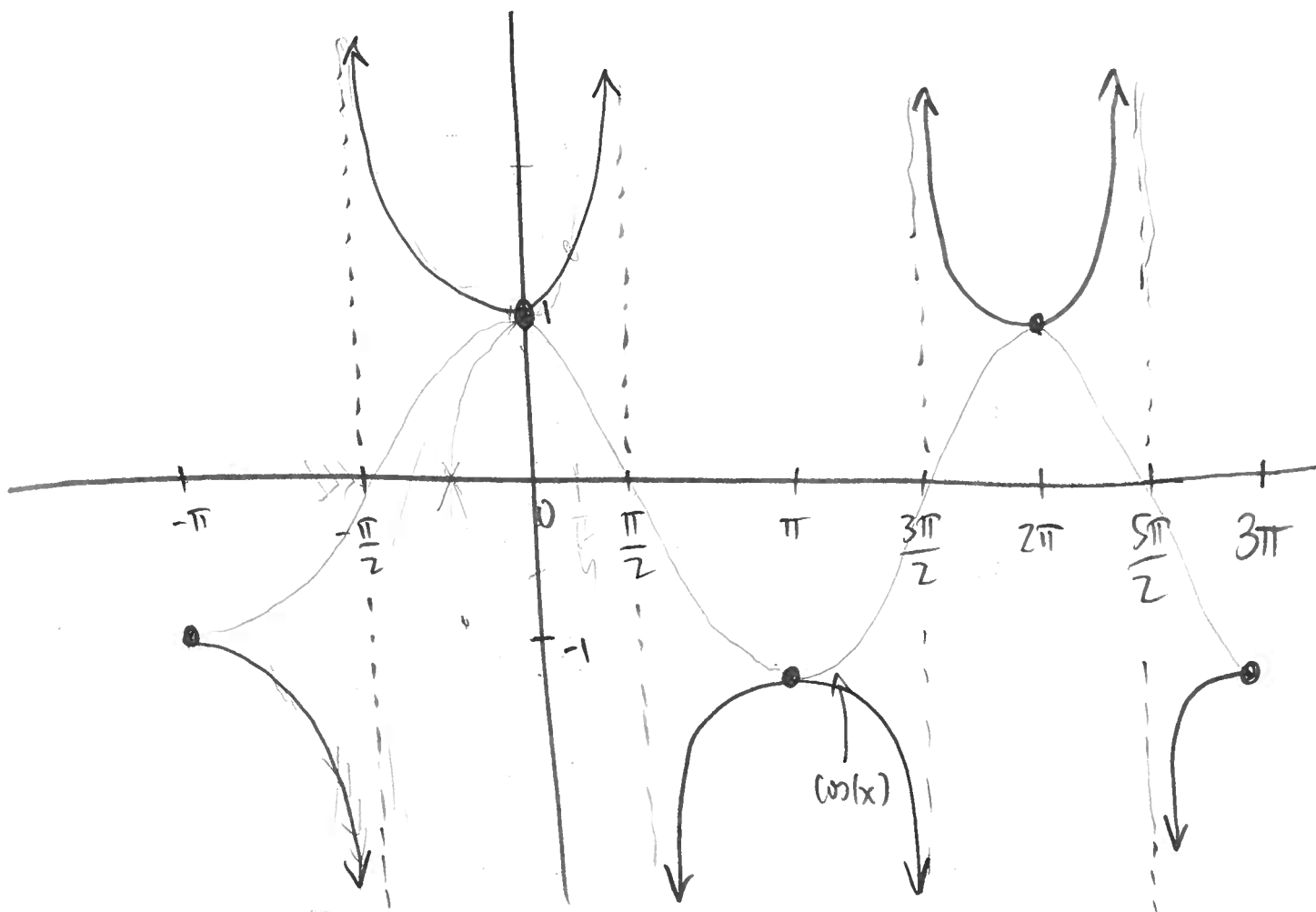


θ -values (angles)	$\sec(\theta)$	
$-\pi$	$= \frac{1}{\cos(-\pi)} = \frac{1}{-1} = -1$	$\rightarrow (-\pi, -1)$
$-\pi/2$	$= \frac{1}{\cos(-\pi/2)} = \frac{1}{0}$ ASYMPTOTE	
0	$= \frac{1}{\cos(0)} = \frac{1}{1} = 1$	$\rightarrow (0, 1)$
$\pi/2$	$\frac{1}{0}$ ASYMPTOTE	
π	-1	$\rightarrow (\pi, -1)$
$3\pi/2$	$\frac{1}{0}$ ASYMPT	
2π	1	$\rightarrow (2\pi, 1)$
$5\pi/2$	ASYMPTOTE	
3π	-1	$\rightarrow (3\pi, -1)$

Similar to tangent

(2)

$\sec(x)$



$0 < x < 1$



$\frac{1}{0} = \infty$

① $\frac{1}{x} > 1$

$\sec(\pi/4) = \frac{1}{\cos(\pi/4)} = \frac{1}{\sqrt{2}/2} = \frac{2}{\sqrt{2}}$

$x = 1/2$

$\frac{1}{x} = \frac{1}{1/2} = 2$

$\frac{1}{x} = 0$

⇓
no soln

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$$\frac{\theta}{\text{Angle}} \mid \csc(\theta) = \frac{1}{\sin(\theta)}$$

$$-\pi \quad \frac{1}{\sin(-\pi)} = \frac{1}{0} \text{ ASYMPTOTE}$$

$$-\pi/2 \quad \frac{1}{-1} = -1$$

$$0 \text{ ASYMPTOTE}$$

$$\pi/2 \quad \frac{1}{1} = 1$$

$$\pi \text{ ASYMPTOTE}$$

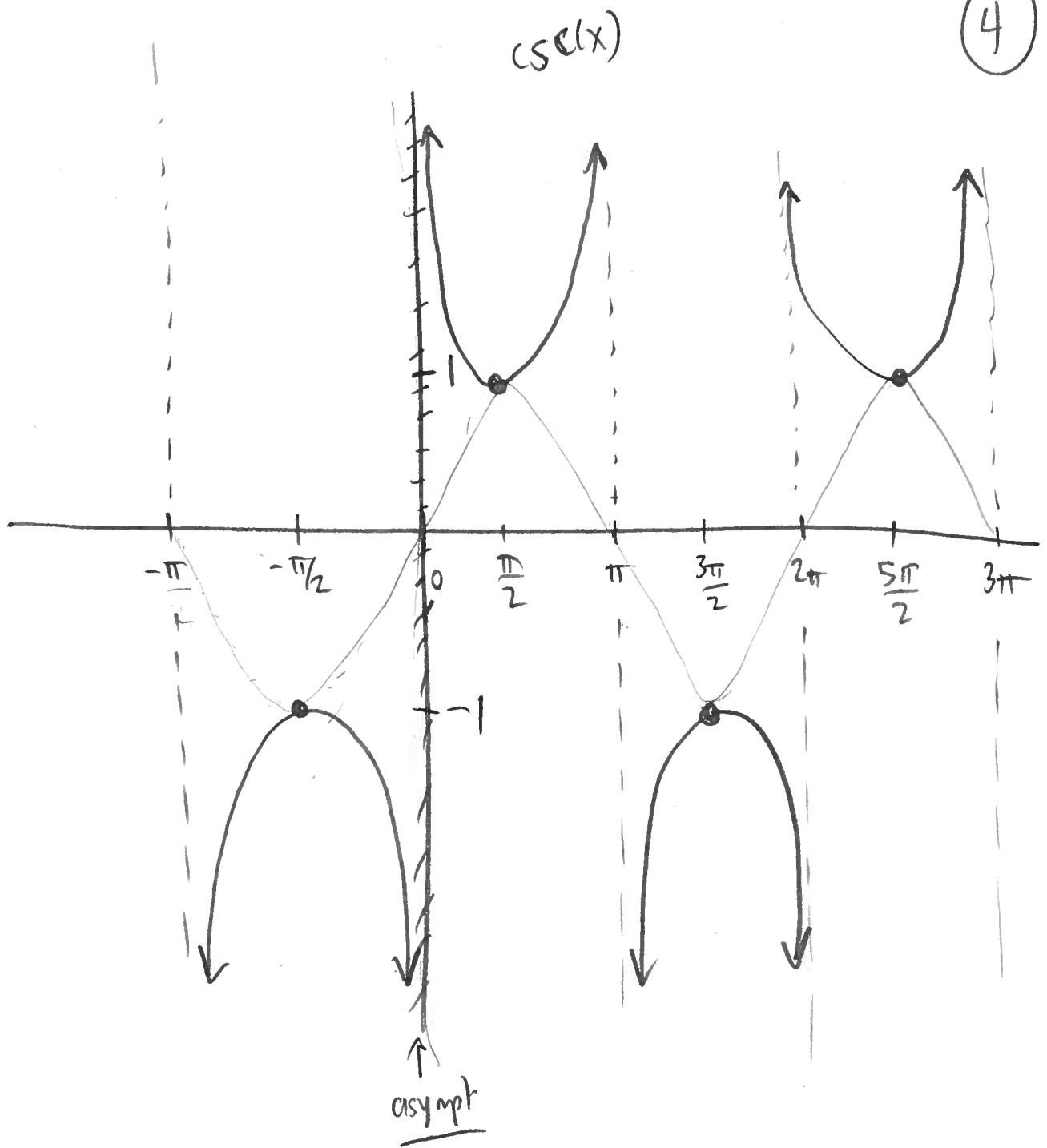
$$3\pi/2 \quad -1$$

$$2\pi \text{ ASYMPTOTE}$$

$$5\pi/2 \quad 1$$

$$3\pi \text{ ASYMPTOTE}$$

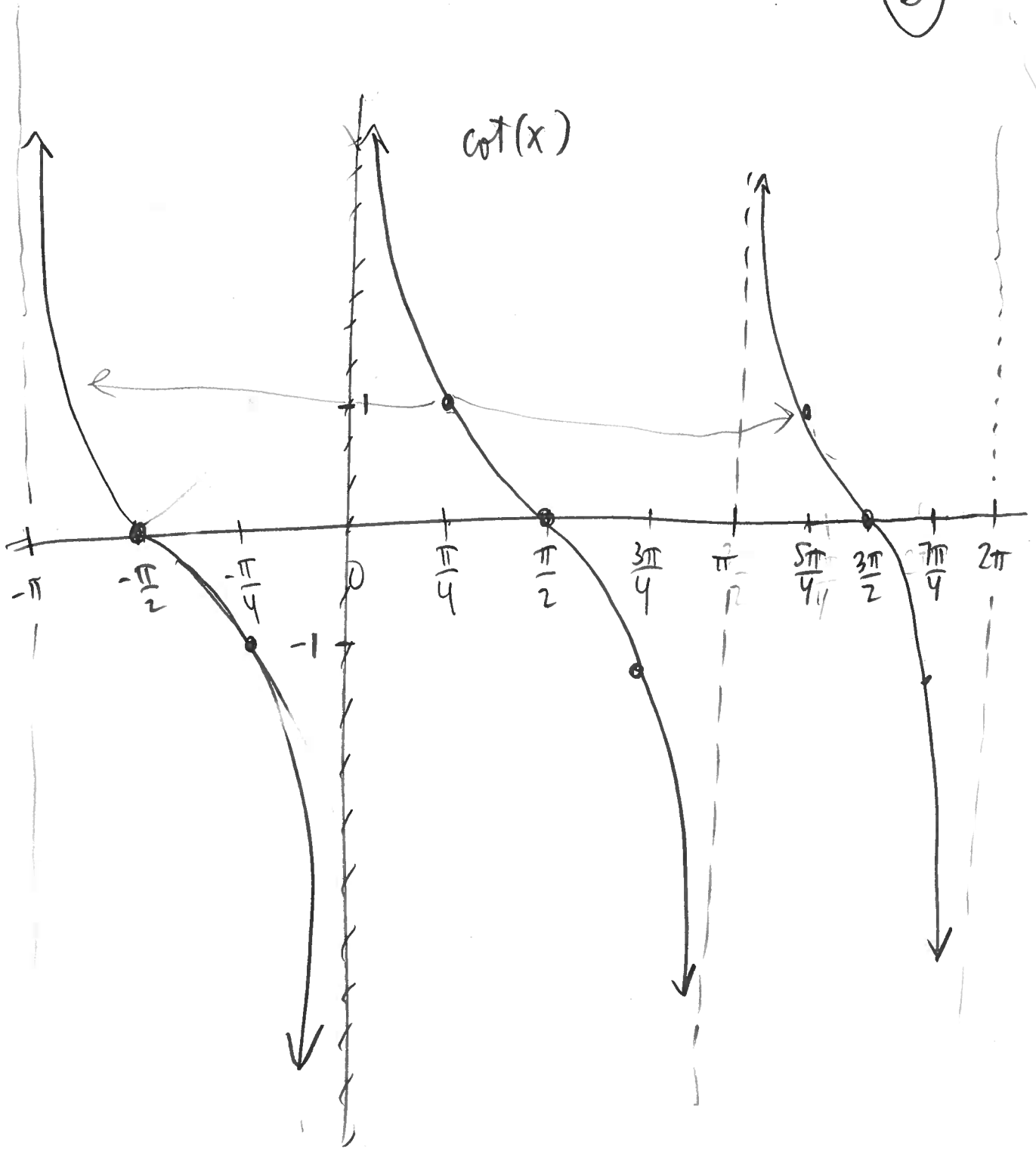
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(5)

θ	$\cot(\theta) = \frac{1}{\tan \theta} = \frac{1}{\frac{\sin \theta}{\cos \theta}} = \frac{\cos \theta}{\sin \theta}$
$-\frac{\pi}{2}$	$\frac{\cos(-\pi/2)}{\sin(-\pi/2)} = \frac{0}{-1} = 0$
$-\frac{\pi}{4}$	$\frac{\sqrt{2}/2}{-\sqrt{2}/2} = -1$
0	$1/0 = \text{ASYMPTOTE!}$
$\pi/4$	$\frac{\sqrt{2}/2}{\sqrt{2}/2} = 1$
$\pi/2$	$0/1 = 0$
$3\pi/4$	$\frac{-\sqrt{2}/2}{\sqrt{2}/2} = -1$
π	$-1/0 \sim \text{asymptote}$
$5\pi/4$	$\frac{-\sqrt{2}/2}{-\sqrt{2}/2} = 1$
$3\pi/2$	0
$7\pi/4$	-1
2π	$1/0 \sim \text{asymptote}$

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TRIG FNCT	Anchor pts to start plot
sine	$0, \frac{\pi}{2}, \pi, \frac{3\pi}{2}, 2\pi$
cosine	$0, \frac{\pi}{2}, \pi, \frac{3\pi}{2}, 2\pi$
tangent	$-\frac{\pi}{2}, -\frac{\pi}{4}, 0, \frac{\pi}{4}, \frac{\pi}{2}$
cotangent	$0, \frac{\pi}{4}, \frac{\pi}{2}, \frac{3\pi}{4}, \pi$
secant	$-\frac{\pi}{2}, 0, \frac{\pi}{2}, \pi, \frac{3\pi}{2}$
cosecant	$0, \frac{\pi}{2}, \pi, \frac{3\pi}{2}, 2\pi$