

Mar. 11, 2014

Sect. 3-1a

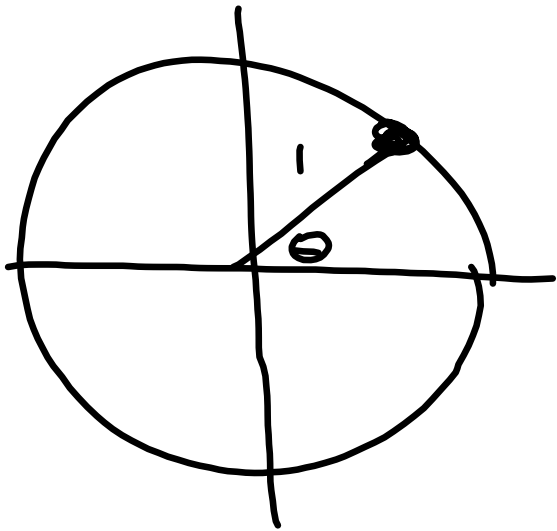
Basic Graphs of Trig Fncs.

$\sin \theta$

$\cos \theta$

$\tan \theta$

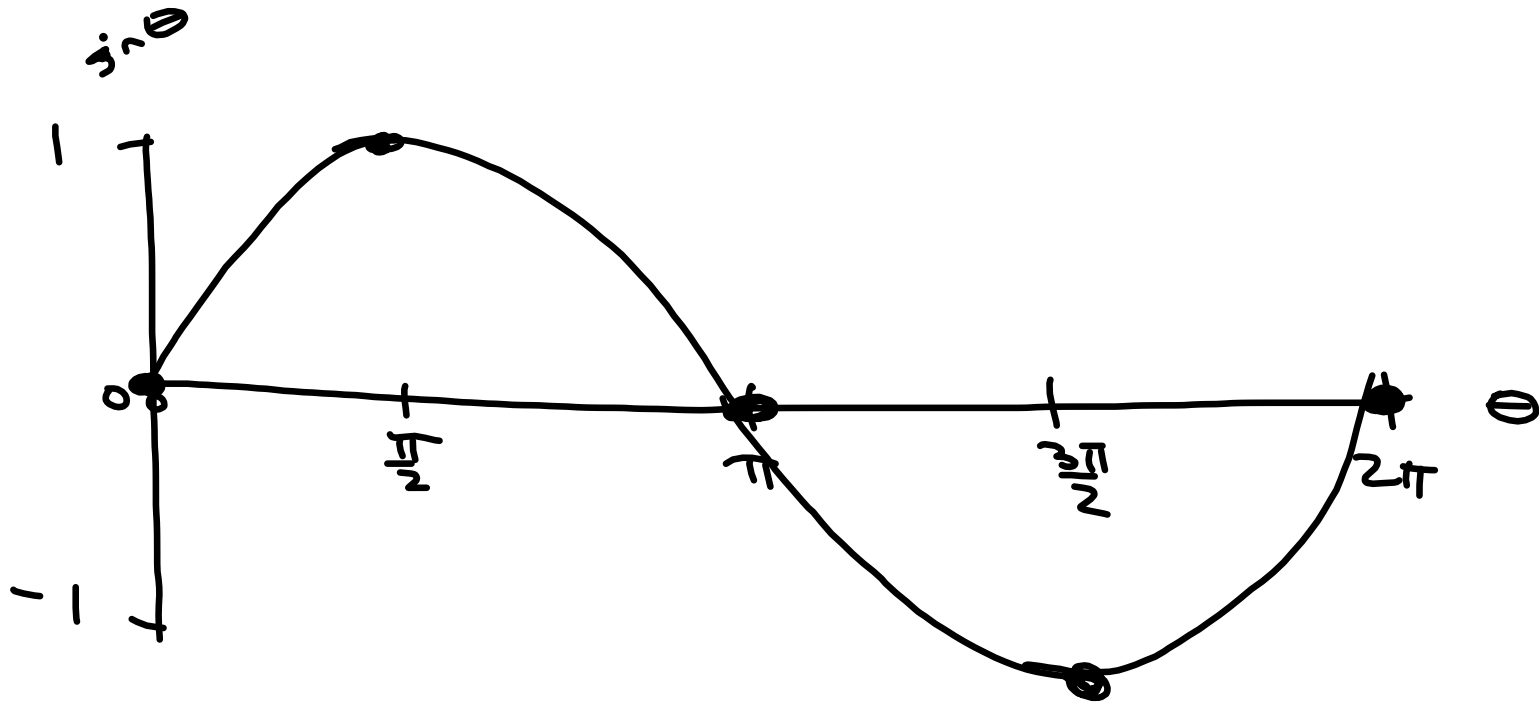
These come from the
unit circle



Graph: $y = \sin \theta$
($\theta, \sin \theta$)

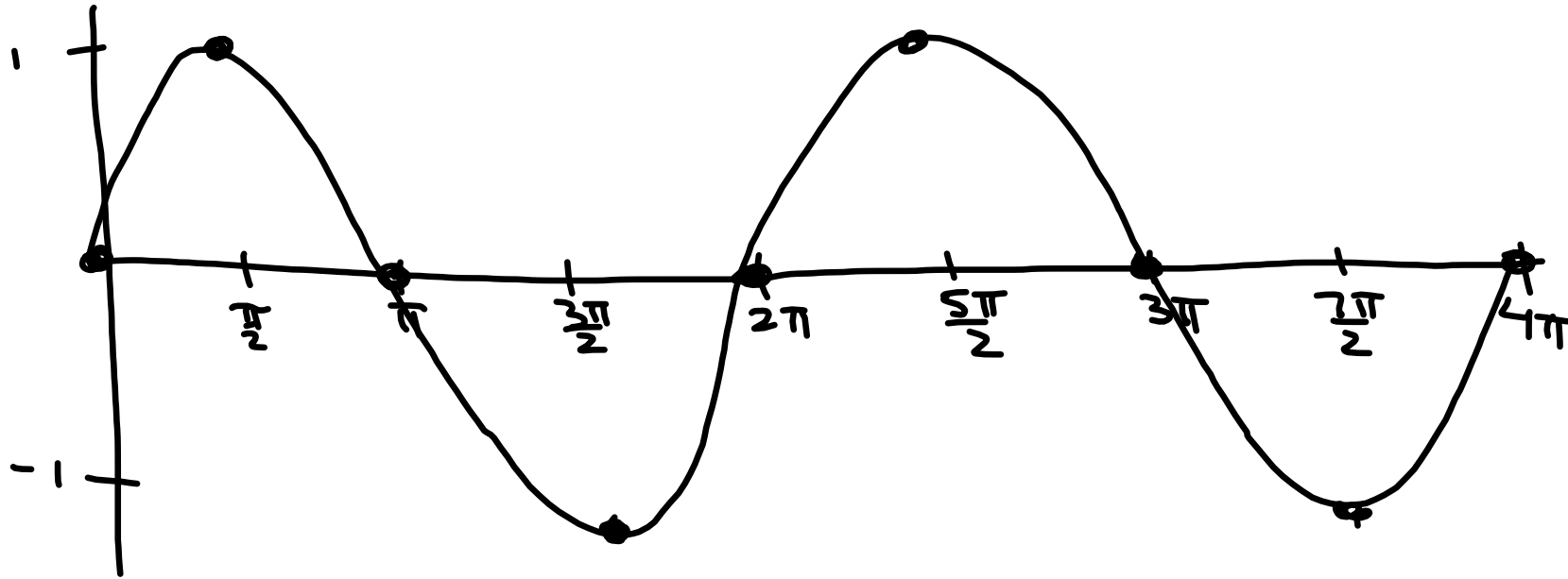
$$\begin{array}{l} \theta \\ \left[0, \frac{\pi}{2} \right] \\ \left[\frac{\pi}{2}, \pi \right] \\ \left[\pi, \frac{3\pi}{2} \right] \\ \left[\frac{3\pi}{2}, 2\pi \right] \end{array}$$

$$\begin{array}{l} \sin \theta \\ \left[0, 1 \right] \\ \left[1, 0 \right] \\ \left[0, -1 \right] \\ \left[-1, 0 \right] \end{array}$$



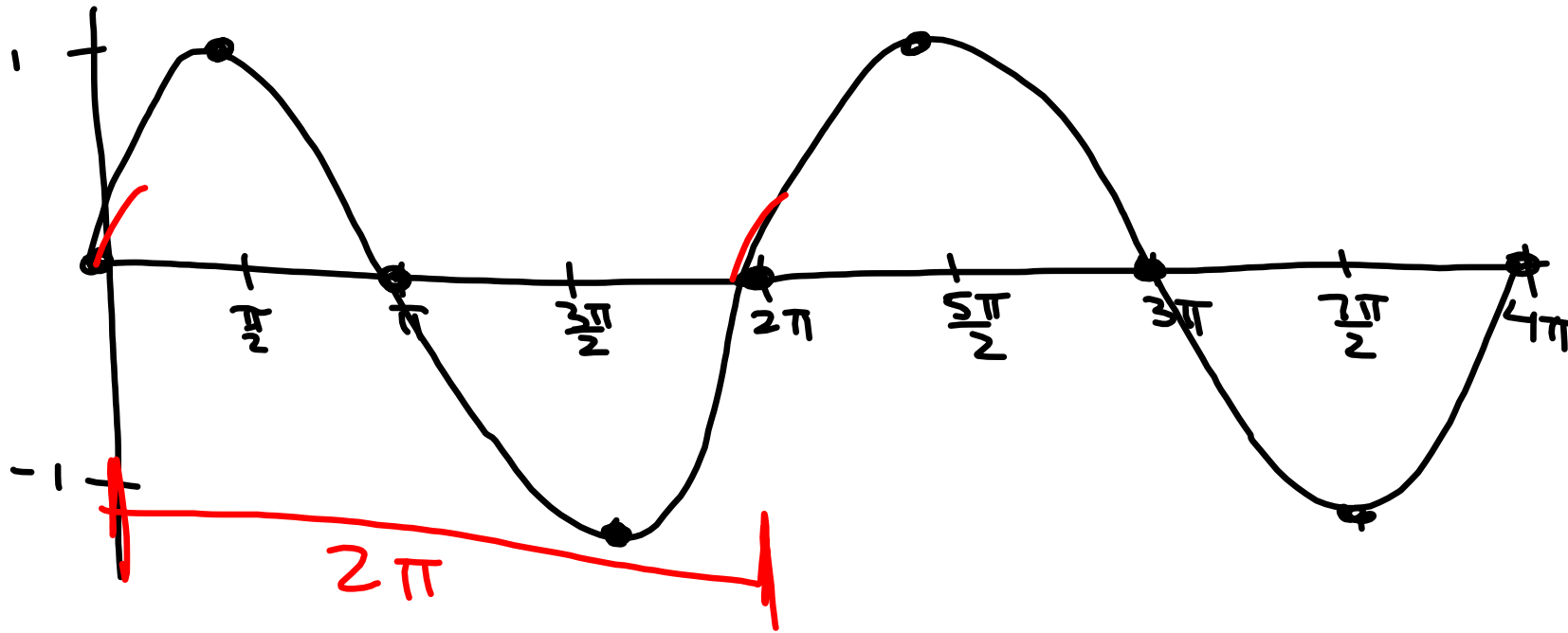
This is a basic sin curve.

As Θ continues around the unit circle again:



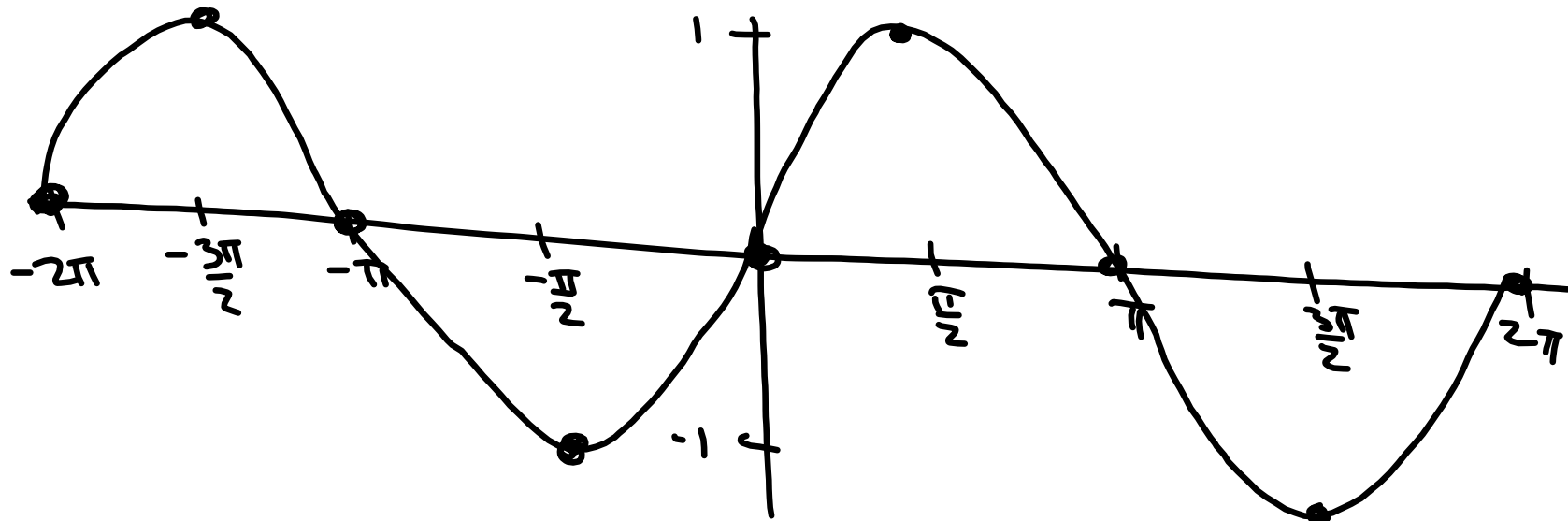
This is called periodic behavior.

How long does it take for the graph to repeat itself?



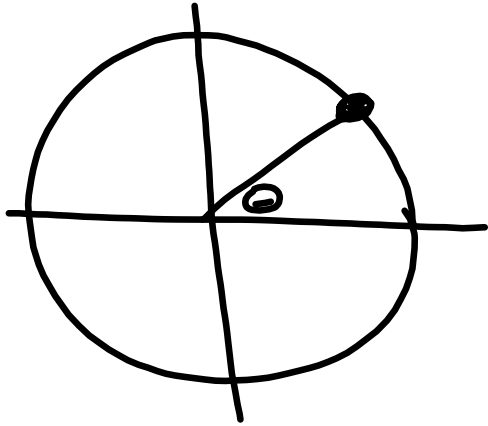
The period of \sin is 2π

What about $-\Theta$?
 (clockwise around unit circle)

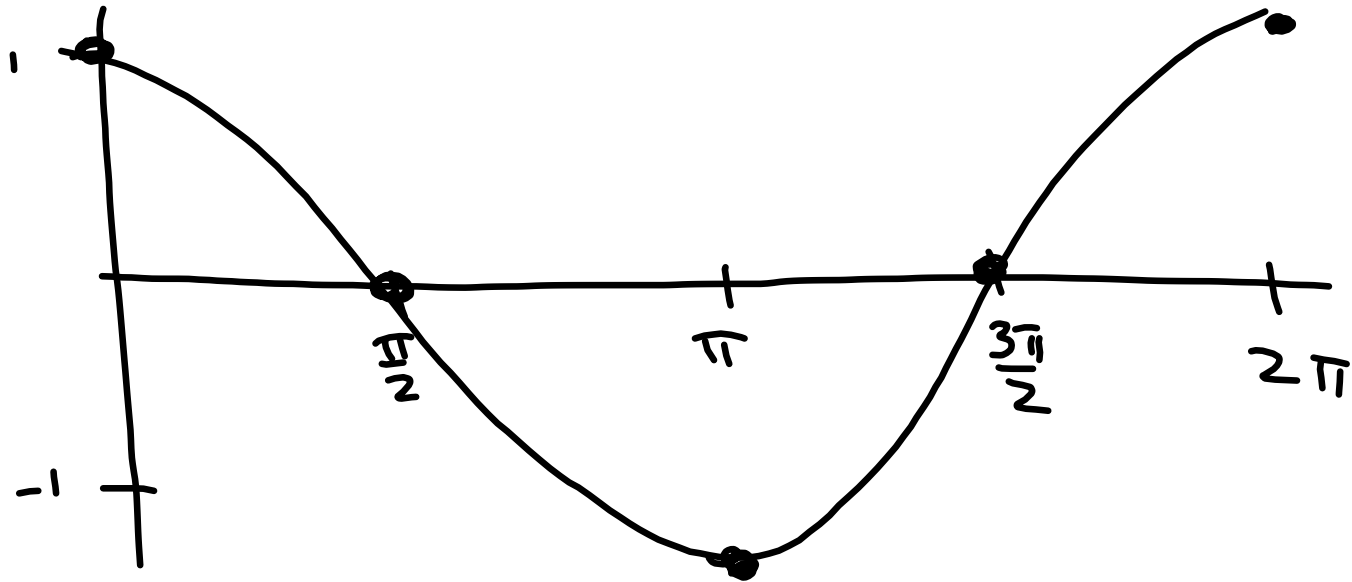


I want two periods
 | pos \ominus
 | neg $\omin�$

$$y = \cos \theta$$

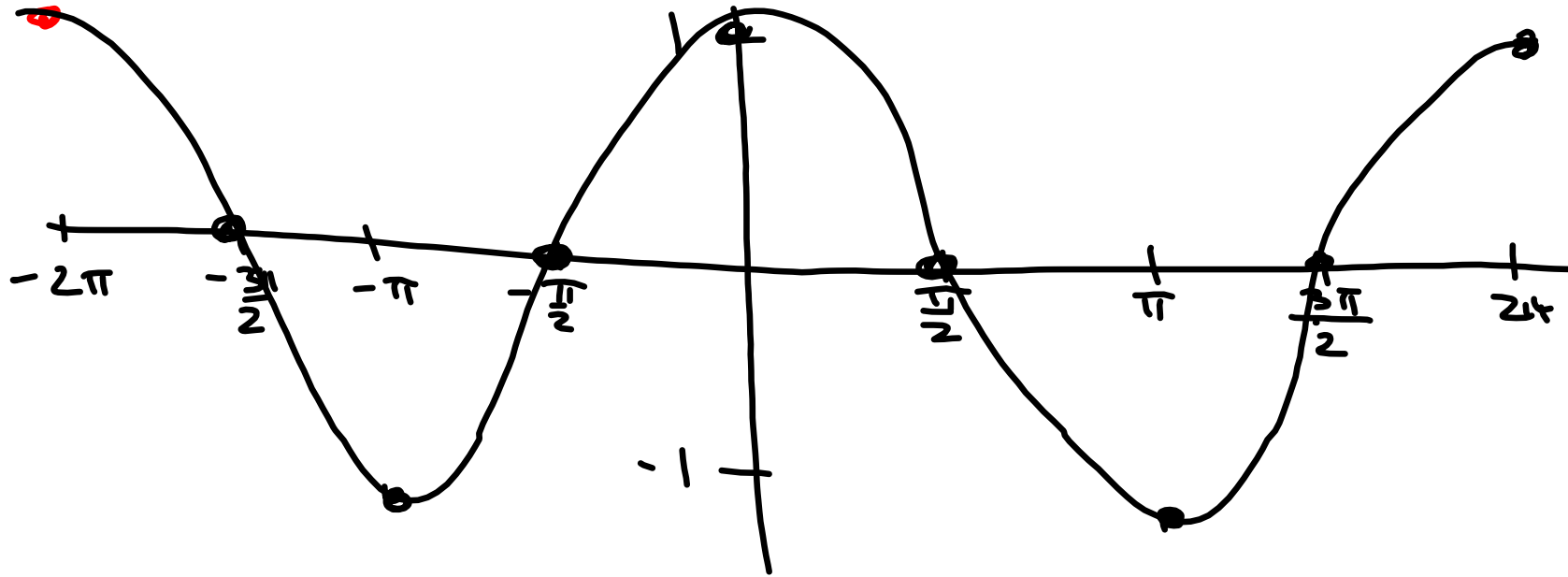


$$\begin{array}{l}
 \theta \\
 \left[0, \frac{\pi}{2} \right] \\
 \left[\frac{\pi}{2}, \pi \right] \\
 \left[\pi, \frac{3\pi}{2} \right] \\
 \left[\frac{3\pi}{2}, 2\pi \right]
 \end{array}
 \begin{array}{l}
 \cos \theta \\
 \left[1, 0 \right] \\
 \left[0, -1 \right] \\
 \left[-1, 0 \right] \\
 \left[0, 1 \right]
 \end{array}$$

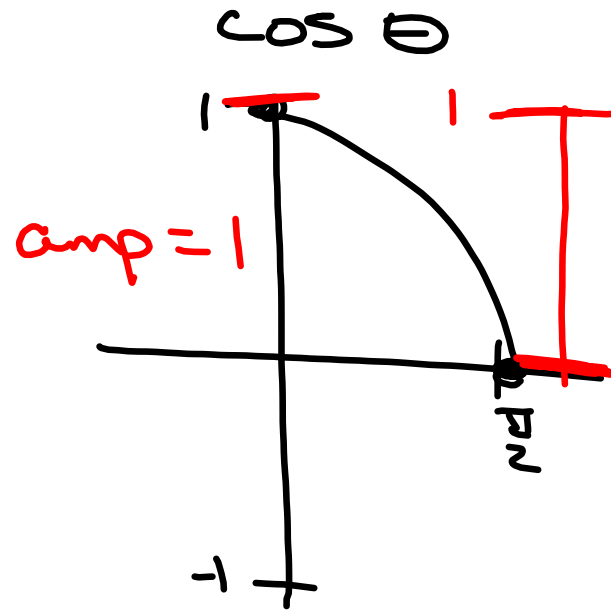
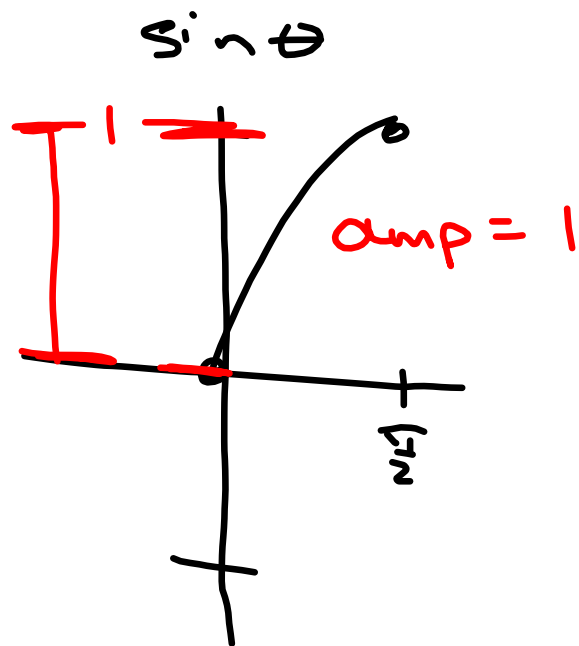


The period for \cos is 2π .

$$y = \cos \theta$$



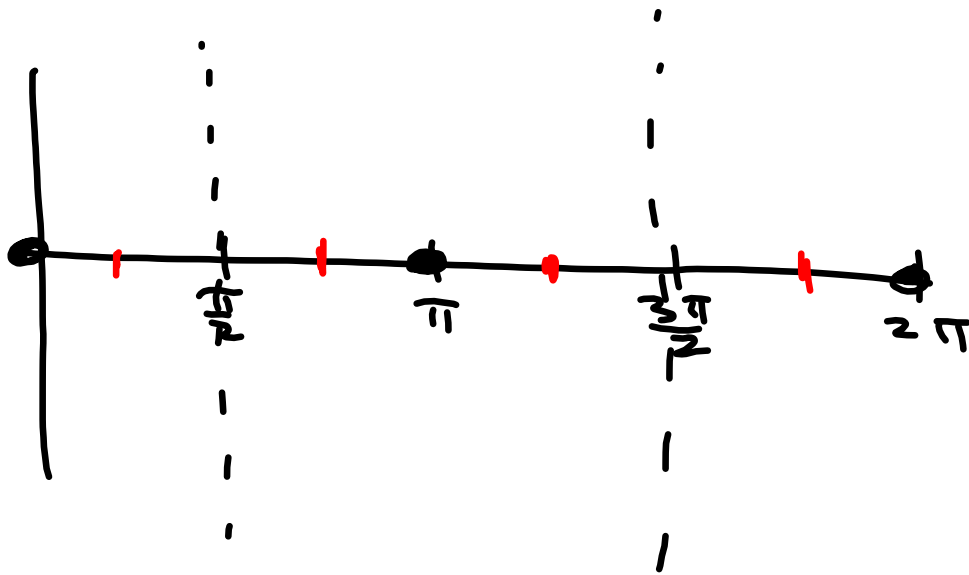
Two periods
| pos θ
| neg θ



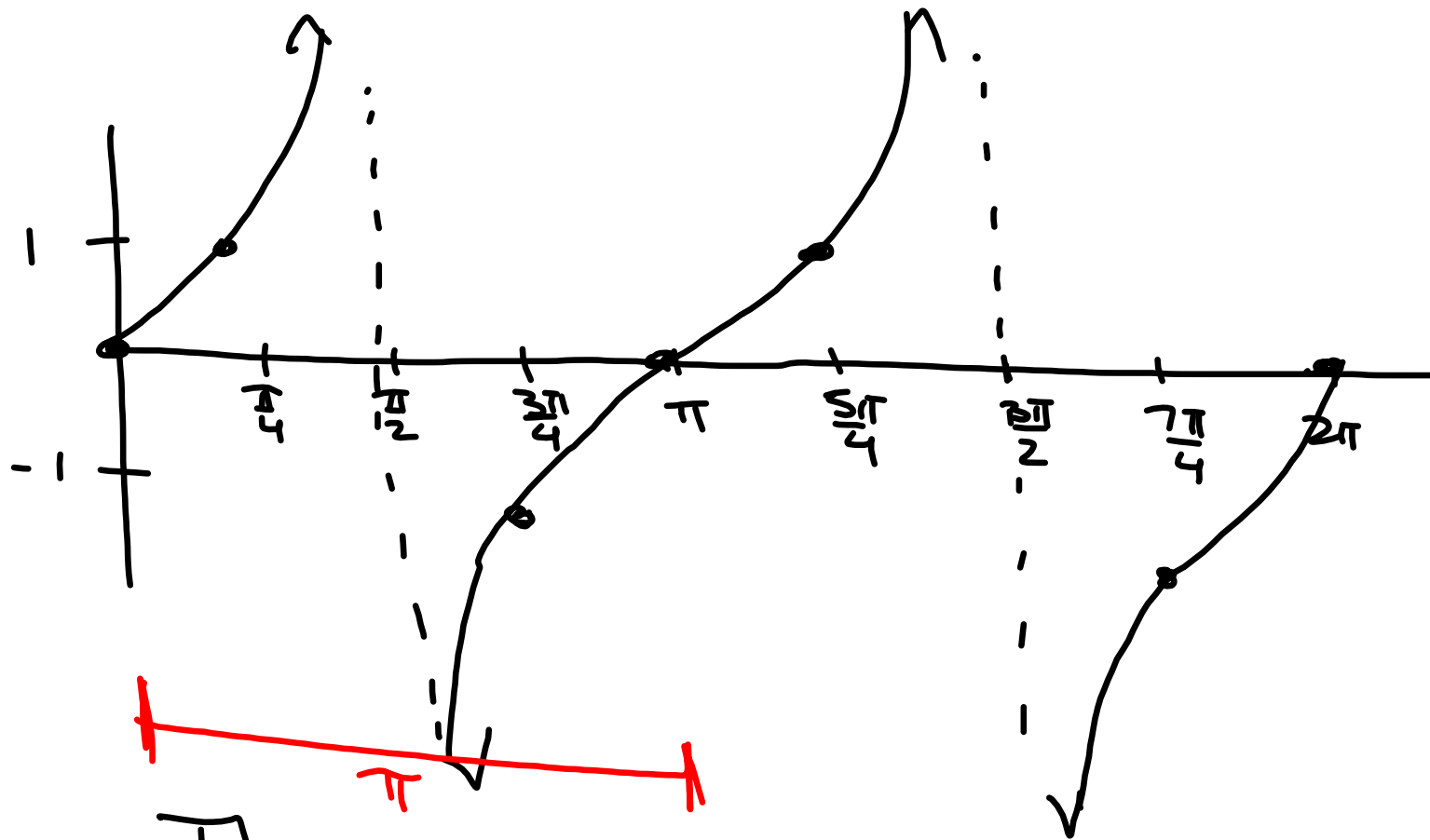
How far up or down the graph goes is called the amplitude.

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

θ	0	$\frac{\pi}{2}$	π	$\frac{3\pi}{2}$	2π
$\sin \theta$	0	1	0	-1	0
$\cos \theta$	1	0	-1	0	1
$\tan \theta$	0	∞	0	∞	0



pick θ in between



The period of \tan is π .

No amp.

