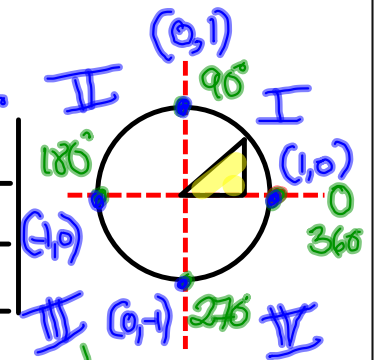


FRIDAY MAY 20, 2016
 LESSON #16

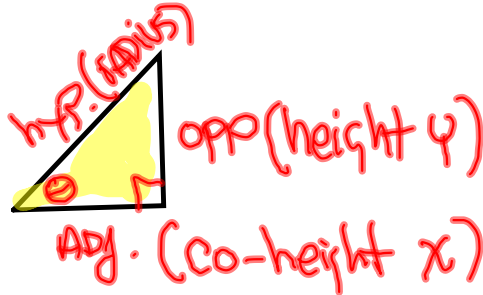
Aim: How do we draw the graph of $y = \sin x$ and $y = \cos x$?

Do Now: Use your calculator (IN Degree Mode) to complete the table

θ	0°	90°	180°	270°	360°
(x) $\cos \theta$	1	0	-1	0	1
(y) $\sin \theta$	0	1	0	-1	0



$$\sin \theta = \frac{\text{opp}}{\text{hyp}}$$



counter clock
 unit circle
 (radius = 1)
 (x, y)

$$\sin \theta = \frac{y}{r}$$

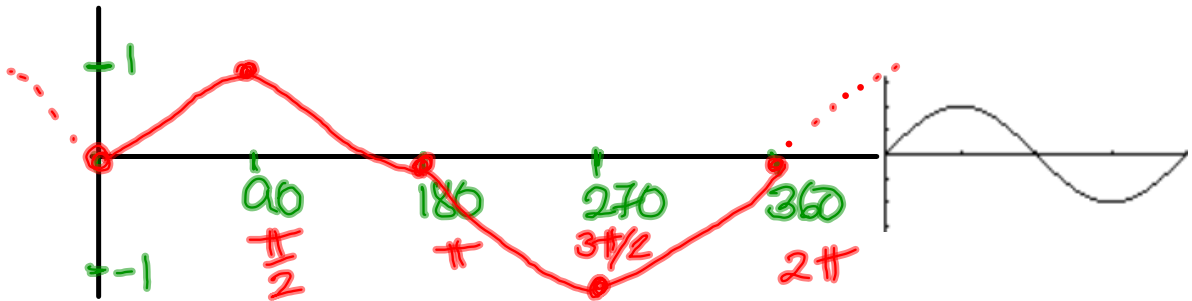
$r \cdot \sin \theta = y$ $\text{if } r=1 \text{ then } y = \sin \theta$

$\text{if } r=1 \text{ then } x = \cos \theta$

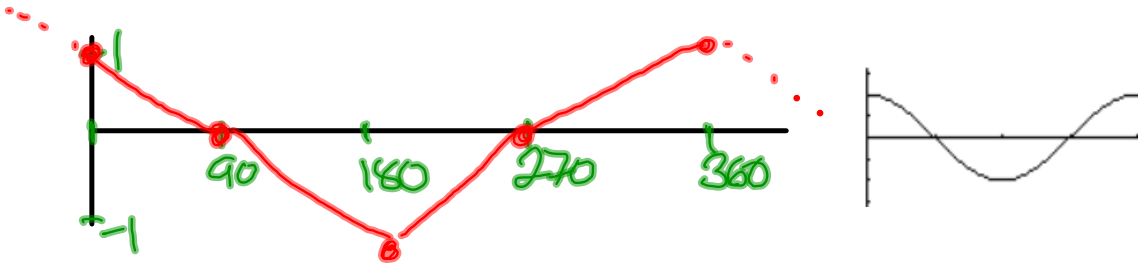
$$\tan \theta = \frac{\text{opp}}{\text{adj.}} = \frac{\sin \theta}{\cos \theta}$$

$$\begin{aligned} \sin \theta &= \frac{\text{opp}}{\text{hyp}} \\ \cos \theta &= \frac{\text{adj.}}{\text{hyp}} \end{aligned} \quad \Rightarrow \quad \frac{\sin \theta}{\cos \theta} = \frac{\frac{\text{opp}}{\text{hyp}}}{\frac{\text{adj.}}{\text{hyp}}} = \frac{\text{opp}}{\text{adj.}}$$

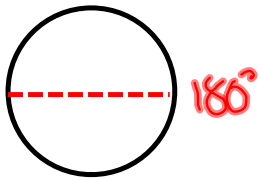
$$y = \sin \theta$$



$$y = \cos \theta$$



π - RADIANS



$$C = 2\pi r$$

$$\frac{C}{2} = \pi r$$

$$\pi r = 1$$

$$\frac{C}{2} = \pi = 180^\circ$$

\swarrow degrees
 \searrow RADIANS.

$$90^\circ \Rightarrow \text{RADIANS}$$

$$\cancel{90} \times \frac{\pi}{\cancel{180}} = \frac{\pi}{2}$$

$$180^\circ \Rightarrow$$

$$\cancel{180} \times \frac{\pi}{\cancel{180}} = \pi$$

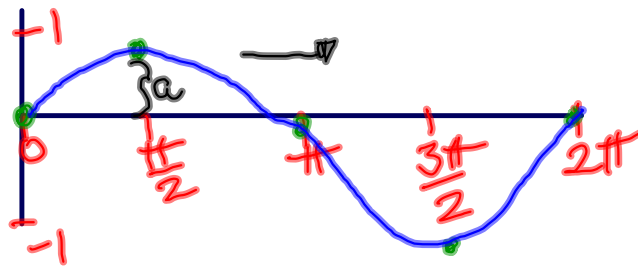
$$270^\circ \Rightarrow$$

$$\frac{270}{180} \times \frac{\pi}{1} = \frac{3\pi}{2}$$

$$\frac{\cancel{270}^3 \pi}{\cancel{180}} = \frac{3\pi}{2}$$

II - Transforming the $y = \sin x$

1)



PARENT
function

a - amplitude

f - frequency (b)

$$y = a \sin f x$$

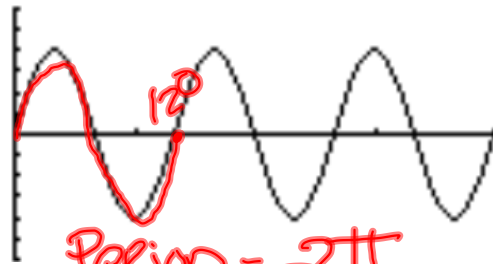
2) $y = 2 \sin x$

3) $y = 2 \sin \underline{\underline{3x}}$

Range $-2 \leq y \leq 2$

- range $-2 \leq y \leq 2$

- from 0 - 360 you have more frequency



Period = $\frac{2\pi}{3}$

↓

Period = $\frac{2\pi}{3} = 120^\circ$