

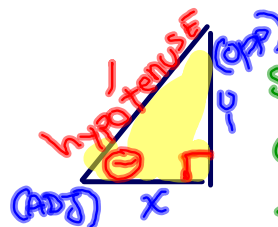
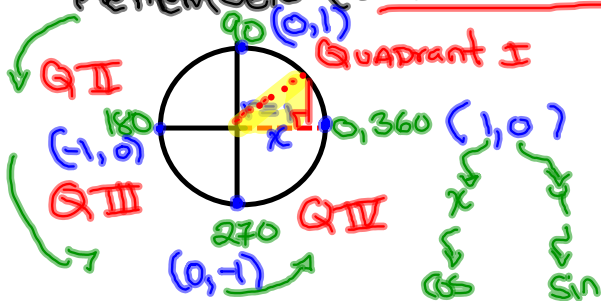
Lesson# 16

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

Do Now: Use your calculator (in degree mode) to complete the following table

θ	0°	90°	180°	270°	360°
$\cos \theta$	1	0	-1	0	1
$\sin \theta$	0	1	0	-1	0

Remember (unit circle)



θ = the measure of an angle

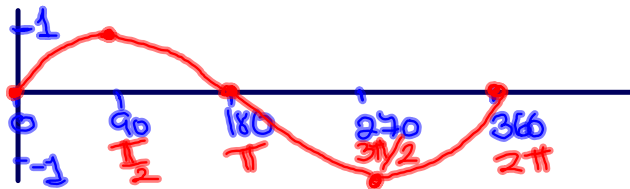
$$\sin \theta = \frac{\text{opposite}}{\text{hypotenuse}} = \frac{y}{1}$$

$$\cos \theta = \frac{\text{adjacent}}{\text{hypotenuse}} = \frac{x}{1}$$

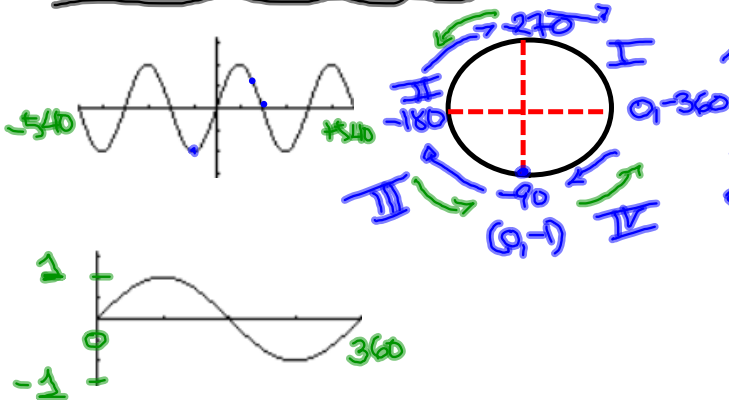
$$\tan \theta = \frac{\text{opp}}{\text{adj}} = \frac{y}{x}$$

I-Graph of $y = \sin \theta$

θ	0°	90°	180°	270°	360°
$\cos \theta$	1	0	-1	0	1
$\sin \theta$	0	1	0	-1	0



Let's use the calculator



Degrees	Radians	Conversion
0°	0	✓
90°	$\frac{\pi}{2}$	$\frac{180}{2} = 90$
180°	π	$\pi = 180^\circ$
270°	$\frac{3\pi}{2}$	$\frac{3(180)}{2} = 270$
360°	2π	$2(180) = 360$

Let's check

$$60^\circ \rightarrow \text{RADIANS} \quad 60 \times \frac{\pi}{180} = \frac{60\pi}{180} = \frac{\pi}{3}$$

$180 \div 3 = 60^\circ$

$$45^\circ \rightarrow \quad 45 \times \frac{\pi}{180} = \frac{45\pi}{180} = \frac{\pi}{4}$$

$180 \div 4 = 45^\circ$

II Graph of $y = \cos \theta$

θ	0°	90°	180°	270°	360°	450°	540°	630°
$\cos \theta$	1	0	-1	0	1	0	-1	0
$\sin \theta$	0	1	0	-1	0	1	0	-1

Handwritten notes above table: $360 + 90 = 450$, $450 + 90 = 540 + 90$

Vocabulary

- Quadrantal Angles: $90, 180, 270, 360$
- **co-terminal** : Angles that have the same terminal side
- Amplitude (Trigonometry): **Height (Low/Height)**

