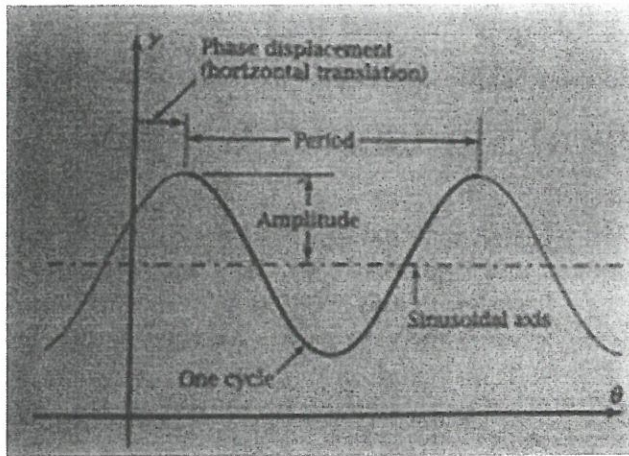


Section 3-1 Sinusoids: Amplitude, Period, Phase Displacement and Cycle

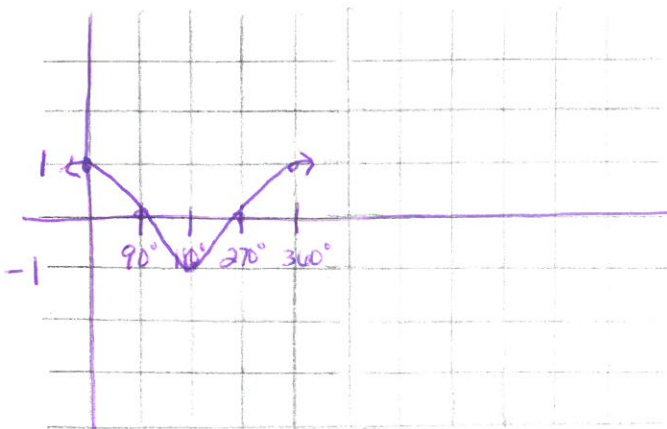


* Know the parts of this graph!

$y = \cos x$

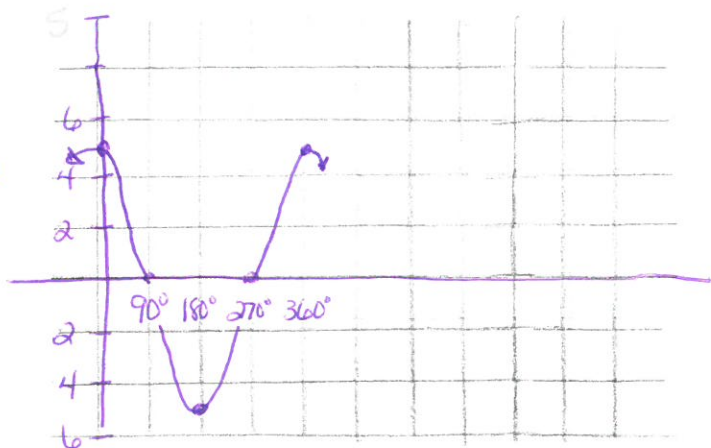
| | | | | | |
|---|----|-----|------|------|------|
| x | 0° | 90° | 180° | 270° | 360° |
| y | 1 | 0 | -1 | 0 | 1 |

- This one cycle of cosine is called the Parent Function
- The amplitude is 1 (height)
- The period is 360°



1. Plot the graph of $y = 5\cos\theta$
What is the amplitude?

rd of 5, so y's above get multiplied by 5

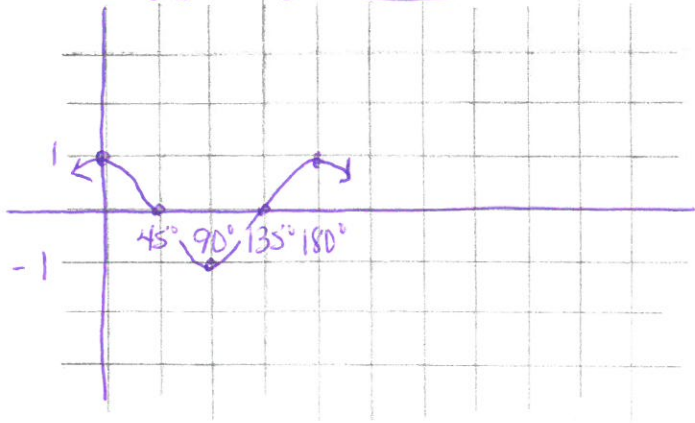


2. Graph $y = \cos 2\theta$

hd = $\frac{1}{2}$ (every x value gets * by $\frac{1}{2}$)

What is the period?

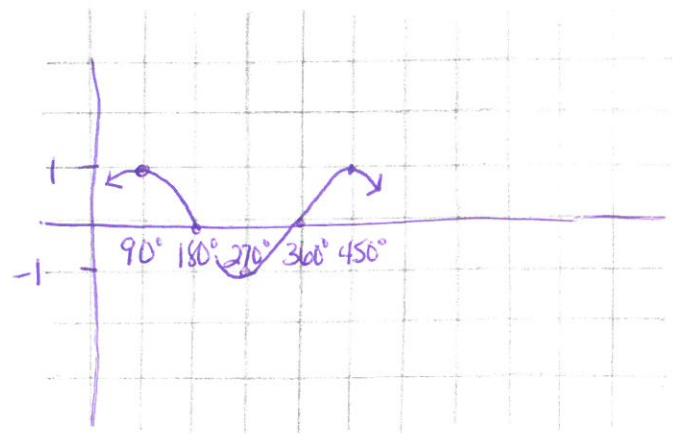
$360^\circ * hd = \text{period}$
 $360^\circ * \frac{1}{2} = 180^\circ$



3. Graph $y = \cos(\theta - 90^\circ)$

ht = rt 90° (every x gets 90° added to it)

What transformation was caused by 90° ?
Phase Displacement is the value of θ that makes argument equal 0.

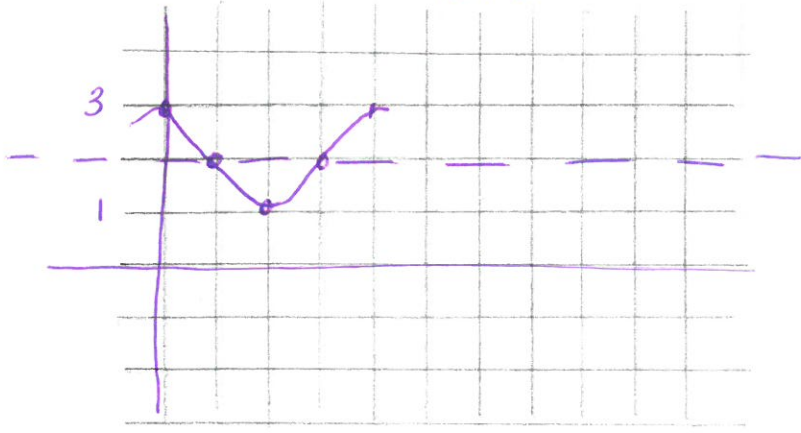


4. $y = 2 + \cos \theta$

vt of 2 (each y value gets 2 added to it)

What transformation is caused by the 2?

The **sinusoidal axis** runs along the middle of the graph of a sinusoid.



5. $y = 6 + 5\cos 3(\theta - 60^\circ)$

vd • Amplitude 5

hd • Period 120° $360^\circ * hd = \text{period}$; $hd = \frac{1}{3}$; $360^\circ * \frac{1}{3} = 120^\circ$

ht • Phase displacement 60° right

vt • Sinusoidal axis location $y = 6$

