

$$y = A \sin/\cos (K\theta \pm C) \pm h$$

Vert (affect entire function)

- ①  $h$ : midline (zeros)
- ②  $A$ : max/mine (how far from midline) - flips graph

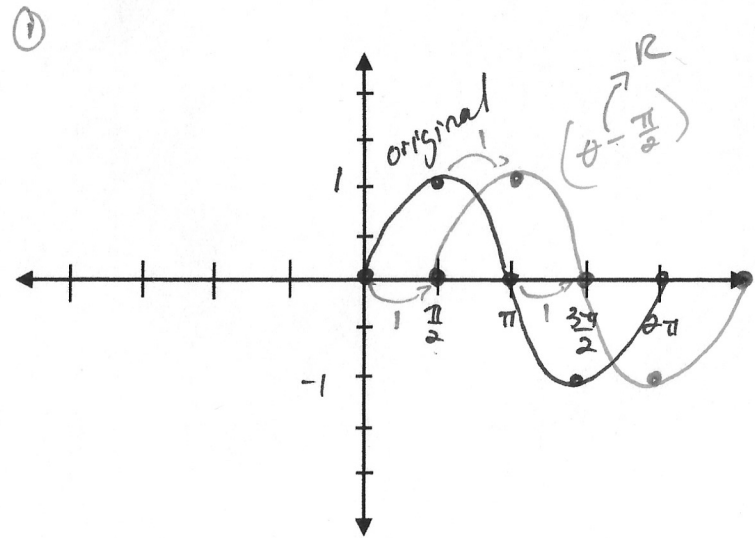
horiz (affect  $\theta$ )

- ③  $K$ : Period change (x-axis)
  - \*  $2\pi \cdot \text{recip } K$
- ④  $C$ : Phase shift ( $\leftarrow$  /  $\rightarrow$ )

\* if period changes, phase shift changes by same value

\* Amp & Period (always have value  $\neq 0$ )  
 $\rightarrow .1 \quad 2\pi$

$\theta$	0	$\frac{\pi}{2}$	$\pi$	$\frac{3\pi}{2}$	$2\pi$
$\sin \theta$	0	1	0	-1	0
$(\theta - \frac{\pi}{2}) R$	$-\frac{\pi}{2}$	0	$\frac{\pi}{2}$	$\pi$	$\frac{3\pi}{2}$
① $\sin(\theta - \frac{\pi}{2})$	-1	0	1	0	-1
③ $(\frac{1}{2}\theta - \frac{\pi}{2})$	0	$-\frac{\pi}{4}$	$\frac{\pi}{4}$	$\frac{3\pi}{4}$	$\frac{5\pi}{4}$
$\sin(\frac{1}{2}\theta - \frac{\pi}{2})$	-1	$-\frac{\sqrt{2}}{2}$	0	$\frac{\sqrt{2}}{2}$	1



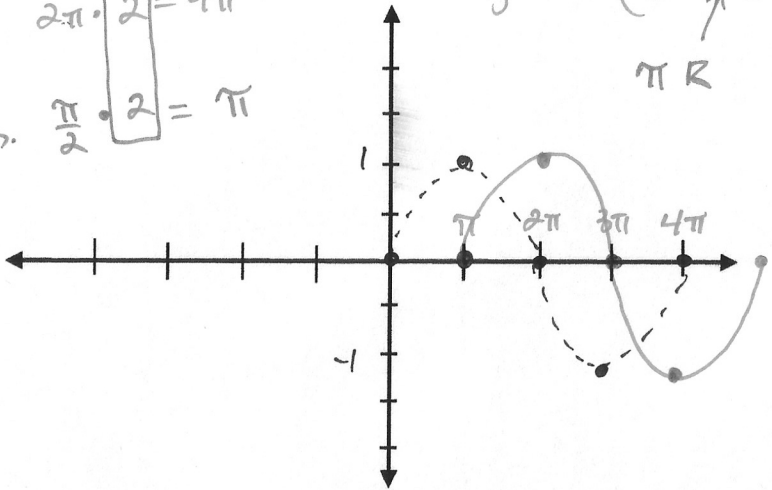
③

$k = \frac{1}{2}$

$2\pi \cdot 2 = 4\pi$

P.S.  $\frac{\pi}{2} \cdot 2 = \pi$

$y = \sin\left(\frac{1}{2}\theta - \frac{\pi}{2}\right)$   
 $\pi R$

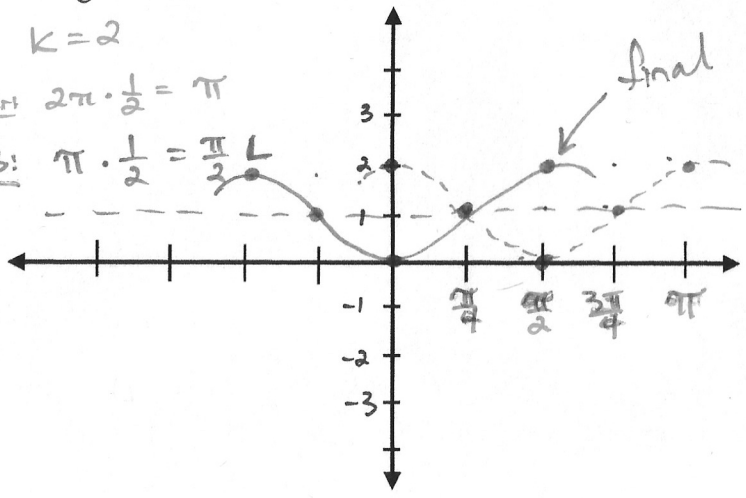


$y = \cos(2\theta + \pi) + 1$

$k = 2$

Per:  $2\pi \cdot \frac{1}{2} = \pi$

PS:  $\pi \cdot \frac{1}{2} = \frac{\pi}{2}$



GRAPHING PHASE SHIFT

$\theta$	0	$\frac{\pi}{2}$	$\pi$	$\frac{3\pi}{2}$	$2\pi$
$\cos \theta$	1	0	-1	0	1
$(\theta + \pi)$	$\pi$	$\frac{3\pi}{2}$	$2\pi$	$\frac{5\pi}{2}$	$3\pi$
$\cos(\theta + \pi)$	-1	0	1	0	-1
$(4\theta + \pi)$					
$\cos(4\theta + \pi)$					

②

$y = \cos \theta$

$y = \cos(\theta + \pi)$

