Amplitude : $|A|$

Period, $P = \frac{2\pi}{|B|}$

Ex $y = \overset{A}{3}\sin \overset{B}{2}x$

$|A| = 3 \qquad P = \frac{2\pi}{2} = \pi$

Ex. $y = 2\sin \frac{1}{2}x$

$|A| = 2 \qquad P = \frac{2\pi}{\frac{1}{2}} = 4\pi$

Ex. $y = \overset{A}{-4}\sin(\overset{B}{-\pi}x)$

$|A| = 4 \qquad P = \frac{2\pi}{\pi} = 2$

Odd & even fcns

even fcns
cosine, secant
$\cos(-\alpha) = \cos\alpha$

odd fcns
sin, csc, tan
cot.
$\sin(-\theta) = -\sin\theta$

$y = -4\sin(-\pi x)$

$= 4\sin \pi x$

Phase shift: $\phi = -\frac{C}{B} = -C \cdot \frac{1}{B}$

Ex. $y = \overset{A}{3}\sin\left(\overset{B}{2}x + \overset{C}{\frac{\pi}{2}}\right)$

$|A| = 3 \qquad P = \frac{2\pi}{2} = \pi \qquad \phi = -\frac{\pi}{2}\cdot\frac{1}{2} = -\frac{\pi}{4}$

Vertical Translation (V.T: $y = D$)

Ex. $y = -3 - 2\sin \pi x$

$|A| = 2 \qquad P = \frac{2\pi}{\pi} = 2 \qquad \phi = 0 \qquad VT: y = -3$

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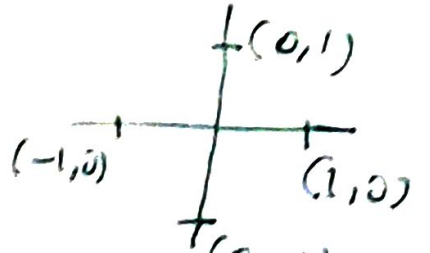
	x	$A\sin(Bx+C)+D$	$A\cos(Bx+C)+D$
0	1 · ϕ	0 + D	A + D
$\frac{1}{4}P$	+ · ϕ	A + D	0 + D
$\frac{1}{2}P$		0 + D	−A + D
$\frac{3}{4}P$		−A + D	0 + D
P		0 + D	A + D

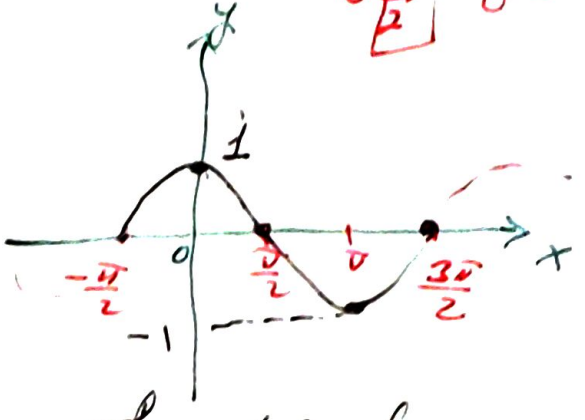


Ex Graph $y = \sin\left(x + \frac{\pi}{2}\right)$ (argument)

$|A| = 1$ $P = 2\pi$ $\left(\frac{2\pi}{1}\right)$ $\phi = -\frac{\pi}{2}$ VT: $y = 0$

0	$\frac{\pi}{2}$	x	y
0	$\frac{\pi}{2}$	$-\frac{\pi}{2}$	0
$\frac{\pi}{2}$	$-\frac{\pi}{2}$	0	1
π		$\frac{\pi}{2}$	0
$\frac{3\pi}{2}$		π	-1
2π		$\frac{3\pi}{2}$	0

$\frac{\pi}{2}$ -1
0 $\frac{\pi}{2}$ 0 1



only 1 cycle

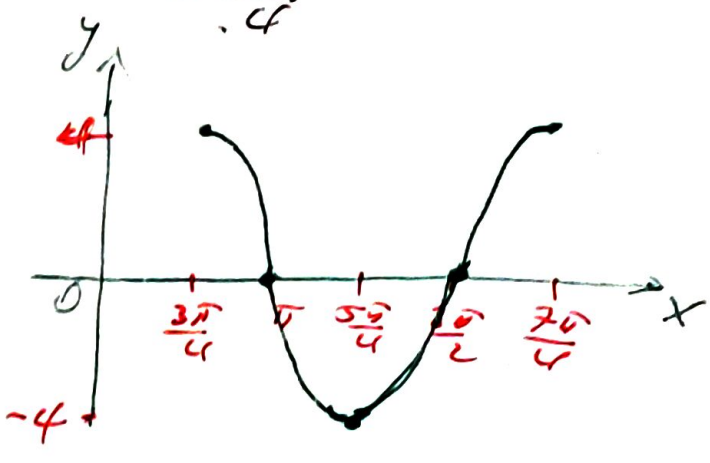
$y = 4\cos\left(2x - \frac{3\pi}{2}\right) = 0$ → $\phi = \frac{3\pi}{4}$ (x) $\left(2x = \frac{3\pi}{2}\right)$

$|A| = 4$ $P = \frac{2\pi}{2} = \pi$ $\phi = -\left(-\frac{3\pi}{2}\right)\left(\frac{1}{2}\right)$

$= \frac{3\pi}{4}$

VT: $y = 0$

$0 + \frac{3\pi}{4}$	x	y
$\frac{\pi}{4} + \frac{3\pi}{4}$	$\frac{3\pi}{4}$	4
$\frac{\pi}{2}$	π	0
$\frac{3\pi}{4}$	$\frac{5\pi}{4}$	-4
π	$\frac{3\pi}{2}$	0
	$\frac{7\pi}{4}$	4



$y = 3 - 5 \cdot \sin(2x + \frac{\pi}{4})$

$|A| = 5$ $\quad B = \frac{2\pi}{B} = 2$ $\quad \varphi = -\frac{\pi}{4} \cdot \frac{1}{\pi} = -\frac{1}{4}$

$V: T: y = 3$

x		x	y
0	$-\frac{1}{4}$	$-\frac{1}{4}$	$0+3=3$
$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{4}$	$-5+3=-2$
1		$\frac{3}{4}$	$0+3=3$
$\frac{3}{2}$		$\frac{5}{4}$	$5+3=8$
2		$\frac{7}{4}$	$0+3=3$