Ex Amplitude, Period, Phase shift, V.T
Table & Graph.

$A \sin(Bx + C) + D$

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

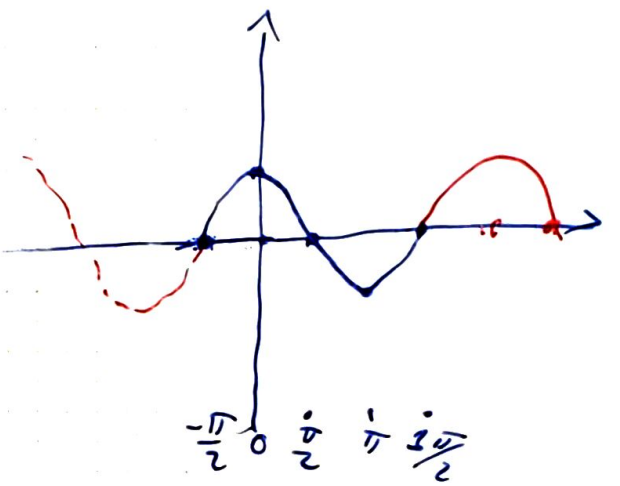
$-\frac{C}{B} = -C\frac{1}{B}$

$|A| = 1$ $\quad T = 2\pi$ $\quad \varphi = -\frac{\pi}{2}$ $\quad VT: y = 0$

$\frac{1}{4}T = \frac{\pi}{2}$

		x	y
0	$-\frac{\pi}{2}$	$-\frac{\pi}{2}$	0
$\frac{1}{4}2\pi$ $\pi/2$	$-\frac{\pi}{2}$	0	1
$\frac{1}{2}2\pi$ π		$\frac{\pi}{2}$	0
$\frac{3}{4}2\pi$ $\frac{3\pi}{2}$		π	-1
2π		$\frac{3\pi}{2}$	0

$-\frac{B}{2}$ → 0



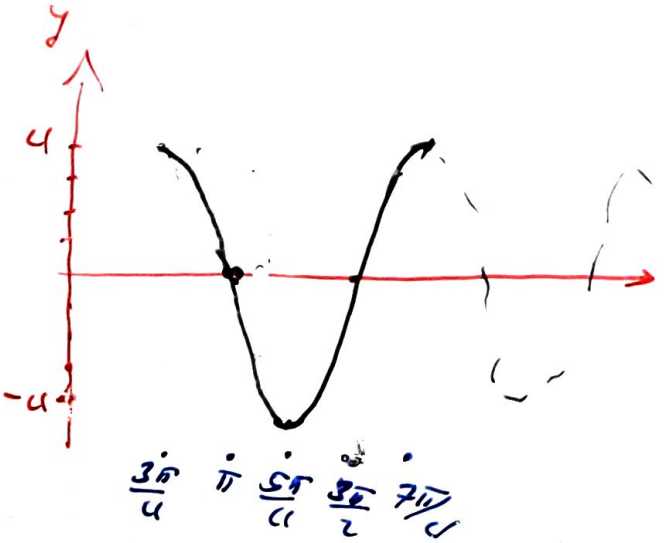
(+) sine  (−) sine 

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

$|A| = 4 \qquad P = \frac{2\pi}{B} = \frac{2\pi}{2} = \pi \qquad \varphi = +\frac{3\pi}{2}\cdot\frac{1}{2} = \frac{3\pi}{4}$

VT: $y = 0$

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



$\frac{3}{4}$

$\frac{4}{4}$

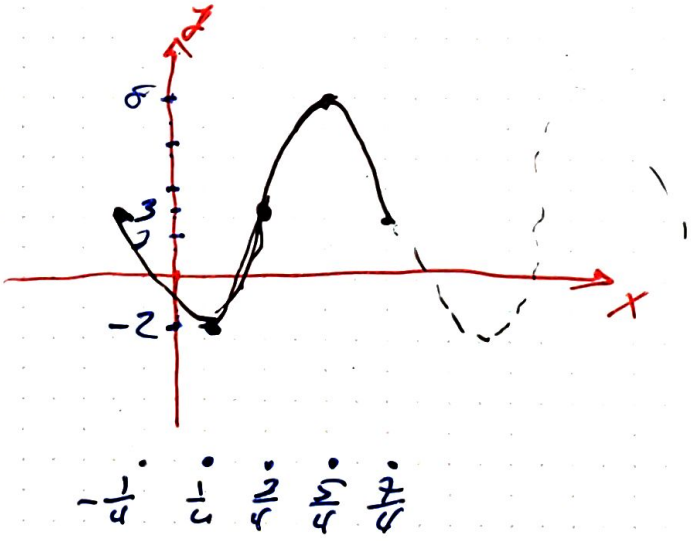
$-\frac{C}{B} = -C\left(\frac{1}{B}\right)$

$y = 3 - 5\sin\left(\pi x + \frac{\pi}{4}\right)$ (A = 5)

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

VT: $y = 3$

		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

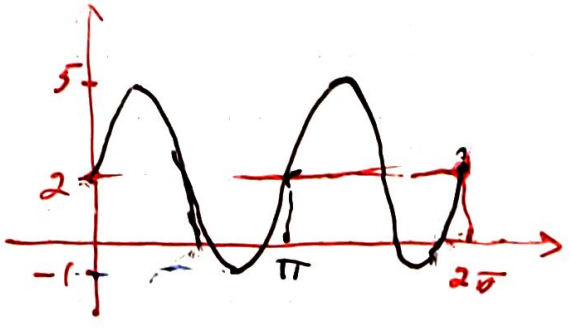


Sine

(+) (−)

Cosine

(+) (−)



$\varphi = 0 = -\frac{C}{B} \Rightarrow C = 0$

$|A| = 3$

$T = \frac{2\pi}{B} = \pi \Rightarrow B = 2$

$D = y = 2$ ✓

$y = 3\sin 2x + 2 \quad 0 \le x \le 2\pi$