Question 1

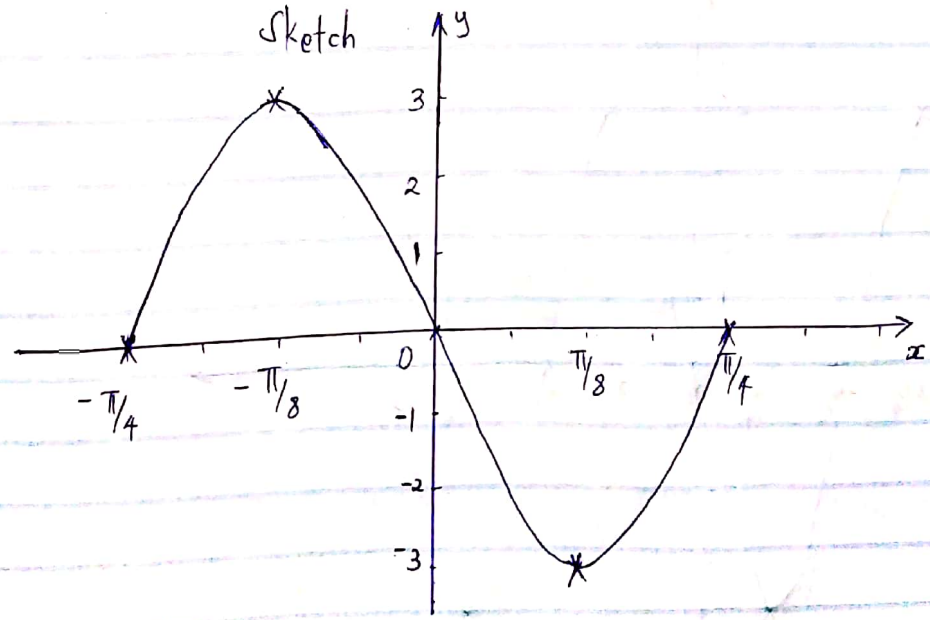
$y = -3\sin 4x$

Period: $\frac{2\pi}{4} = \frac{\pi}{2}$

Amplitude = 3

Phase shift: 0

x	$-\pi/4$	$-\pi/8$	0	$\pi/8$	$\pi/4$
y	0	3	0	-3	0



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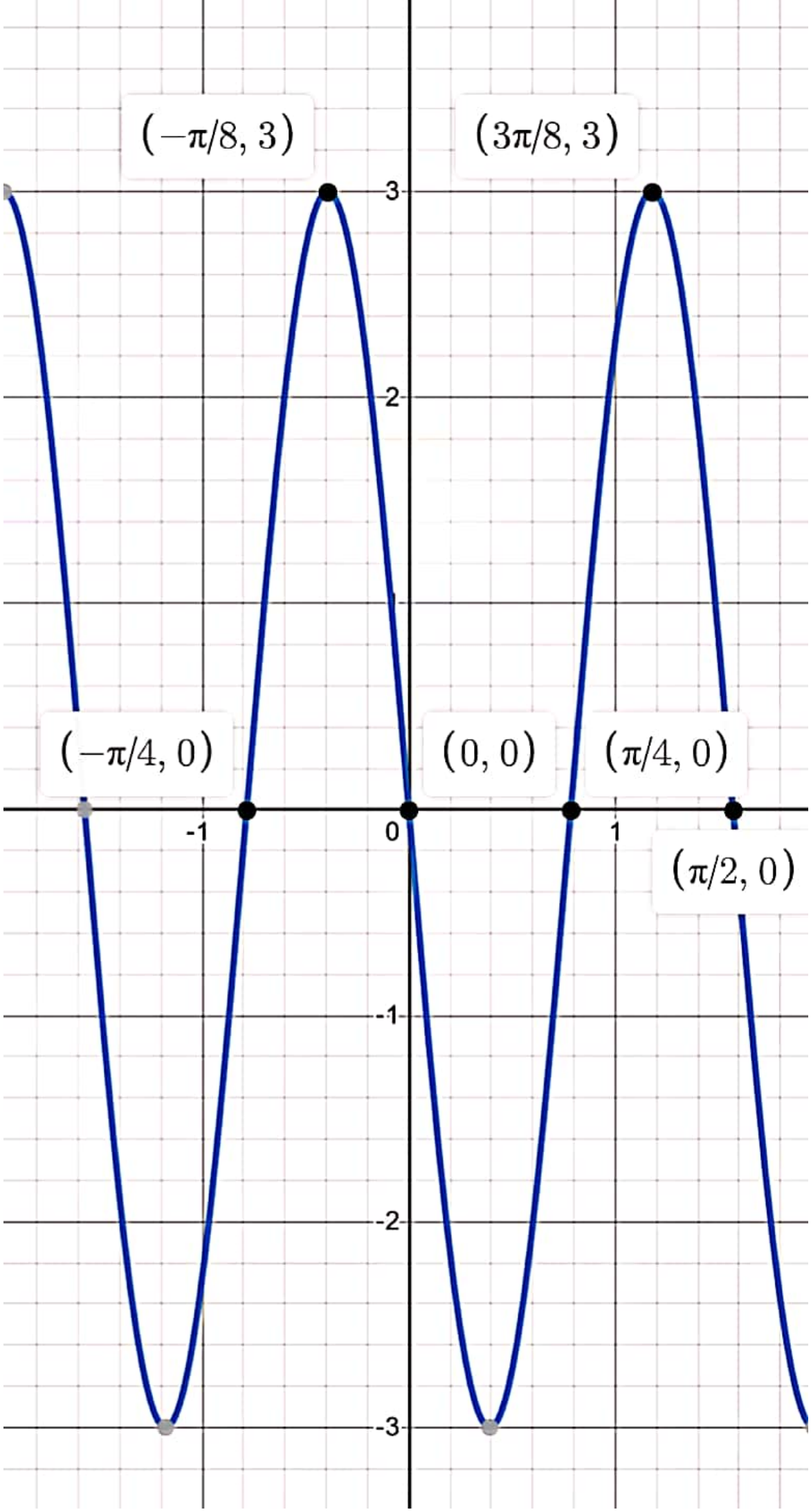

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Question 2

$y = 4\cos(2x - 90)$: $y = 4\cos(2(x - 45°))$

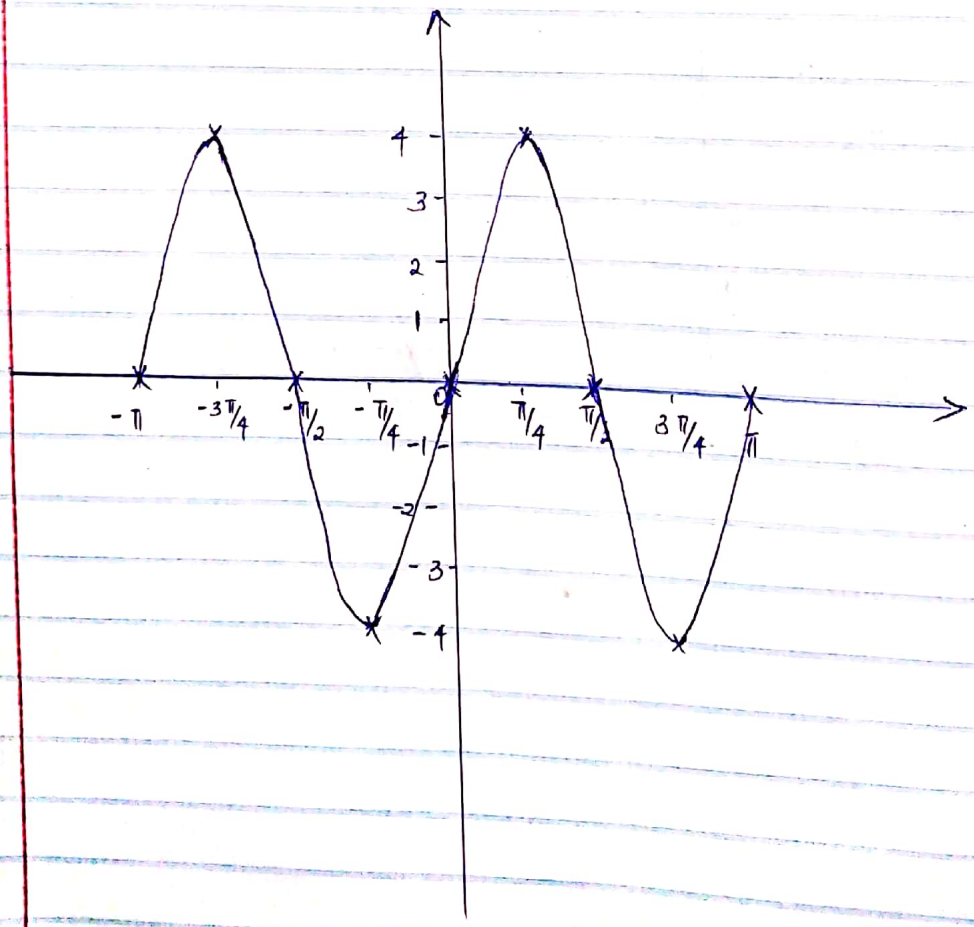
Period = $\frac{2\pi}{2} = \pi$

Amplitude = 4

Phase shift : 45° to the right

Sketch: using $y = 4\cos(2x - \pi/2)$

x	$-\pi$	$-3\pi/4$	$-\pi/2$	$-\pi/4$	0	$\pi/4$	$\pi/2$	$3\pi/4$	π
y	0	4	0	-4	0	4	0	-4	0



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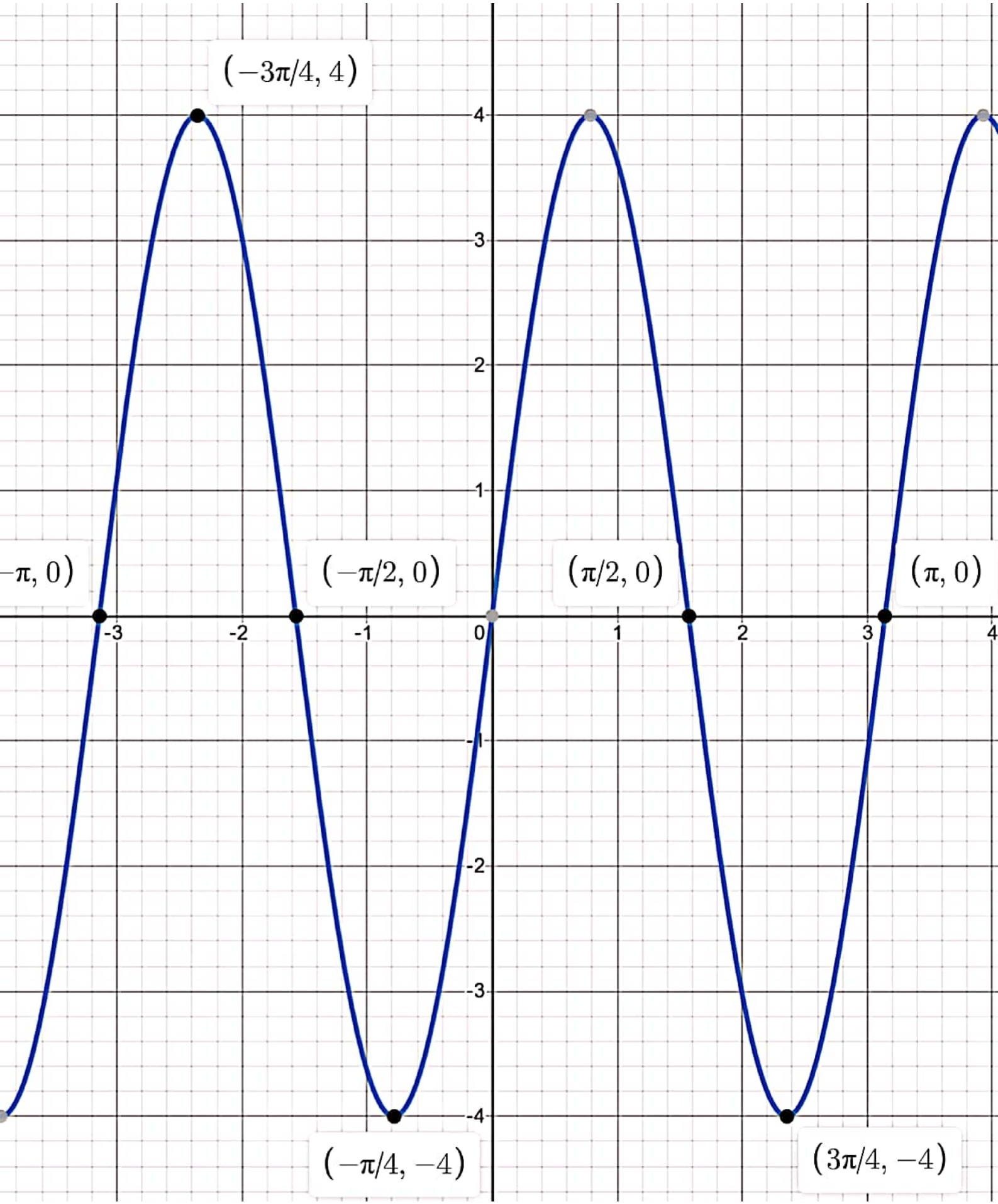

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Question 3

$y = \sin(3x + 270°) = y = \sin 3(x + 90°)$

Amplitude: 1

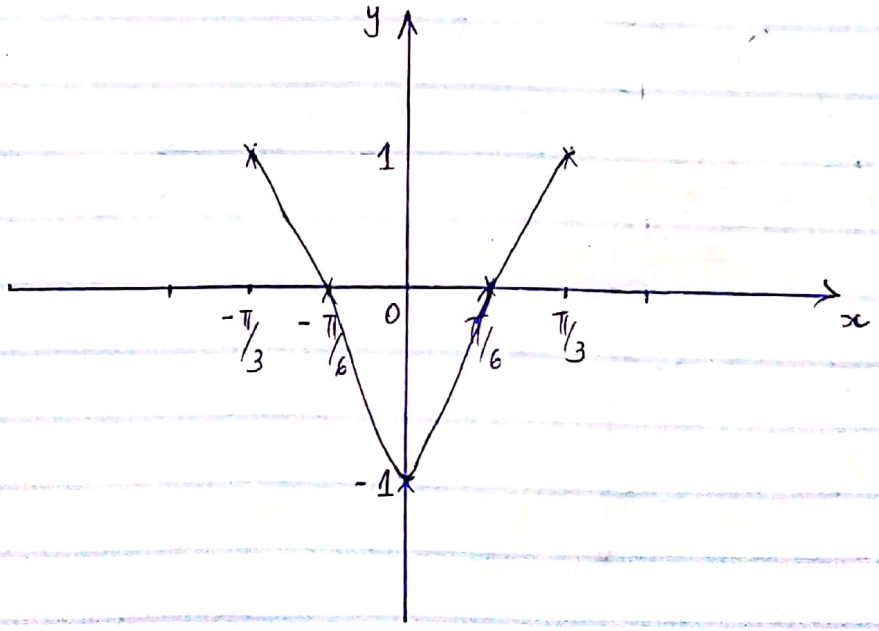
Period: $\frac{2\pi}{3}$

Phase shift: 90° to the left $(-90°)$

Sketch

Rewriting in terms of Pi : $y = \sin(3x + 3/2\,\pi)$

x	$-\pi/3$	$-\pi/6$	0	$\pi/6$	$\pi/3$
y	1	0	−1	0	1



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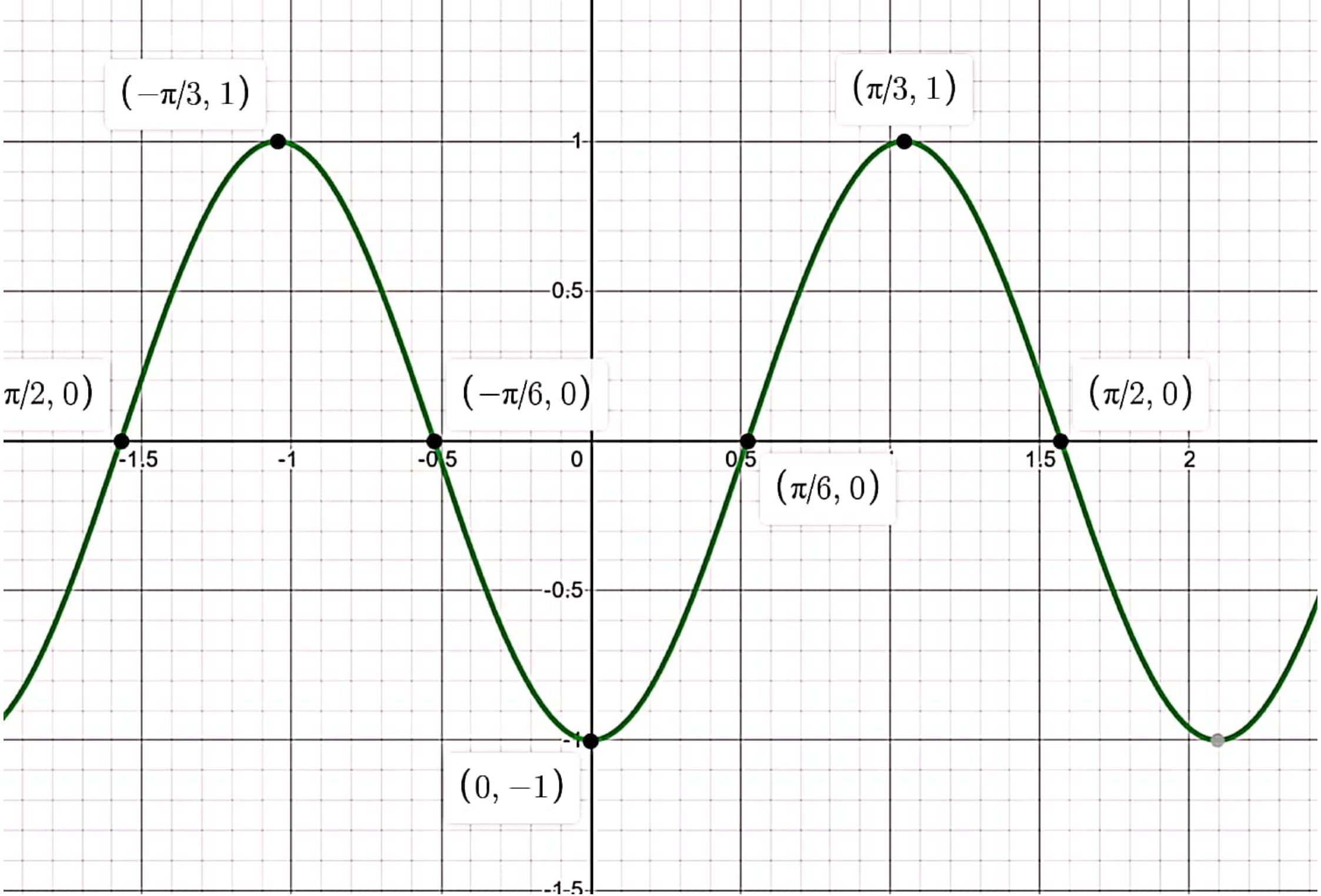

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Question 4

$y = -2 \cos 2x$

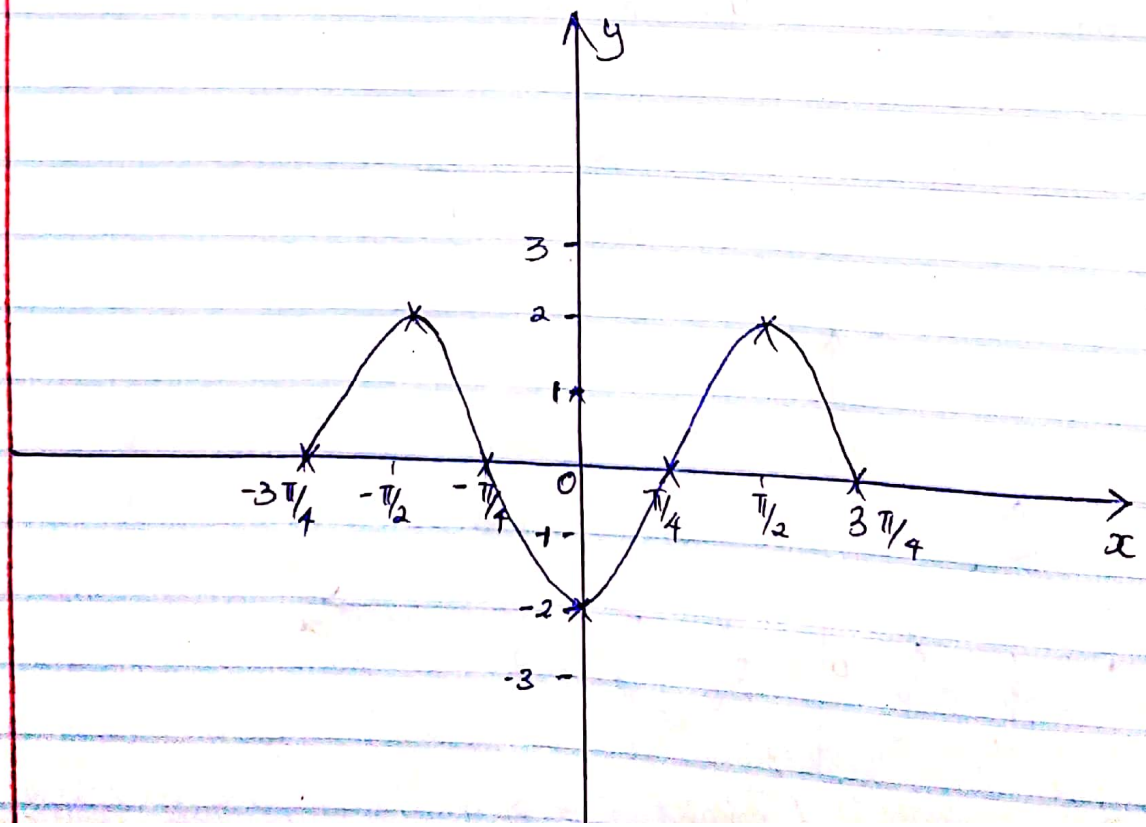
Amplitude : 2

Period : $\frac{2\pi}{2} = \pi$

Shift : 0

sketch.

x	$-3\pi/4$	$\pi/2$	$-\pi/4$	0	$\pi/4$	$\pi/2$	$3\pi/4$
y	0	2	0	-2	0	2	0



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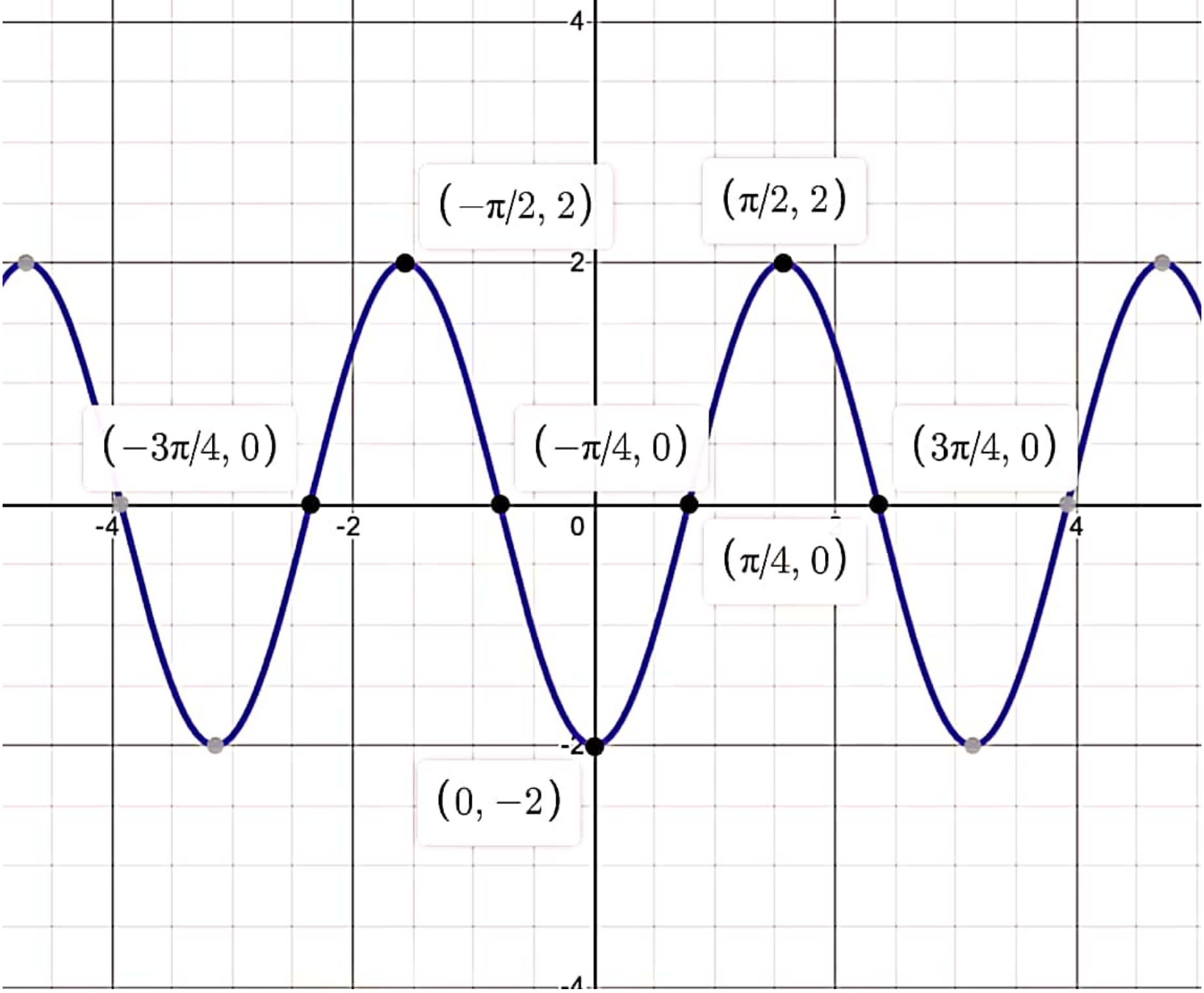

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Question 5

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

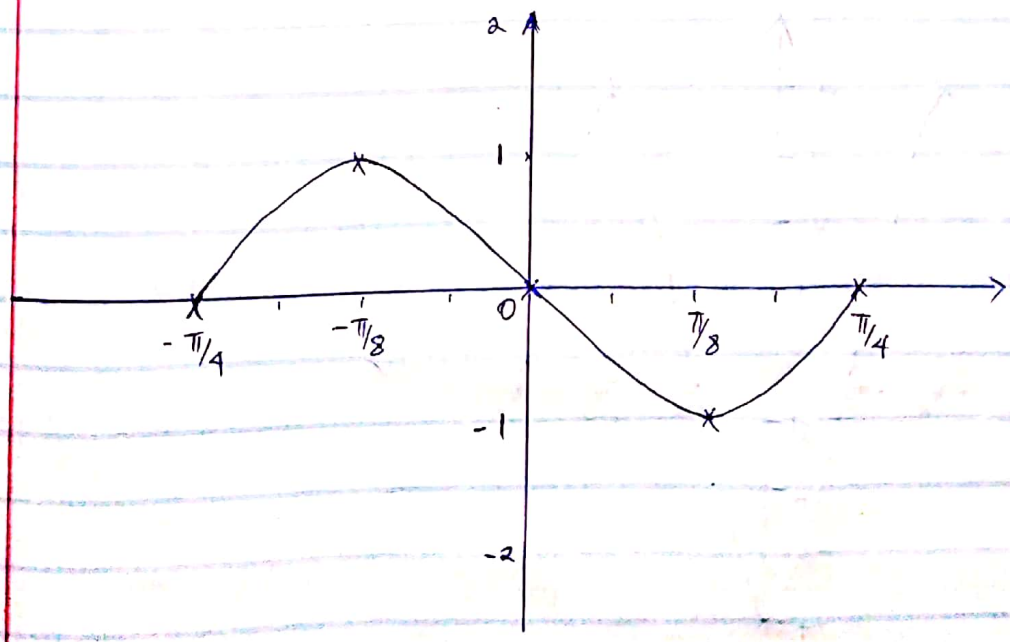
Amplitude: 1

Period: $\frac{2\pi}{4} = \frac{\pi}{2}$

Phase shift: $\pi/4$ to the right

Sketch.

x	$-\pi/4$	$-\pi/8$	0	$\pi/3$	$\pi/4$
y	0	1	0	1	0



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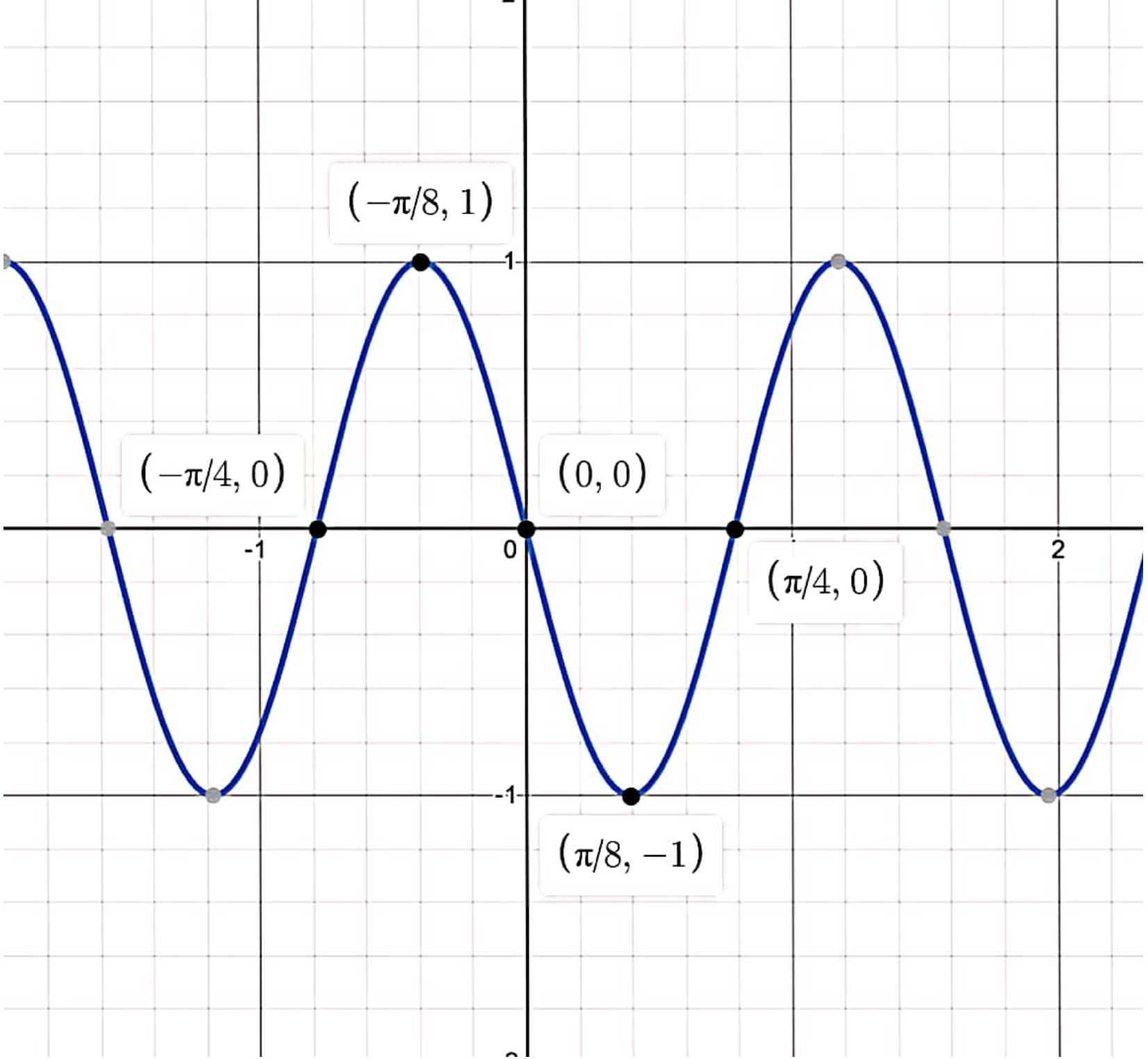

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Question 6

$y = -4\cos 3x$

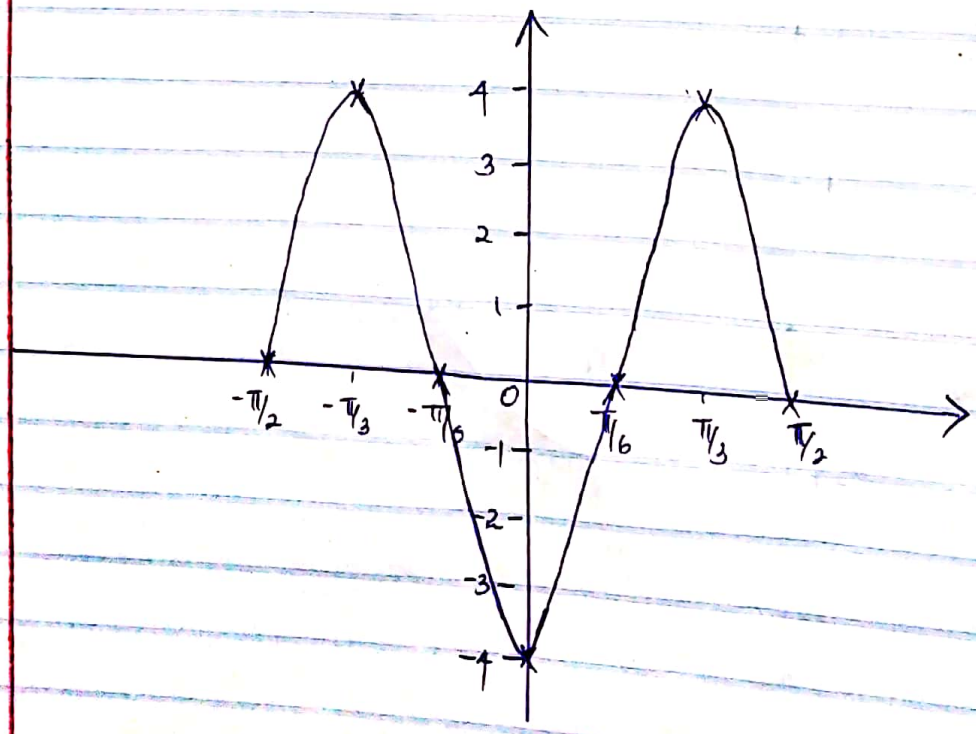
Amplitude: 4

Period: $\frac{2\pi}{3}$

Phase shift : 0

Sketch.

x	$-\pi/2$	$-\pi/3$	$-\pi/6$	0	$\pi/6$	$\pi/3$	$\pi/2$
y	0	4	0	-4	0	4	0



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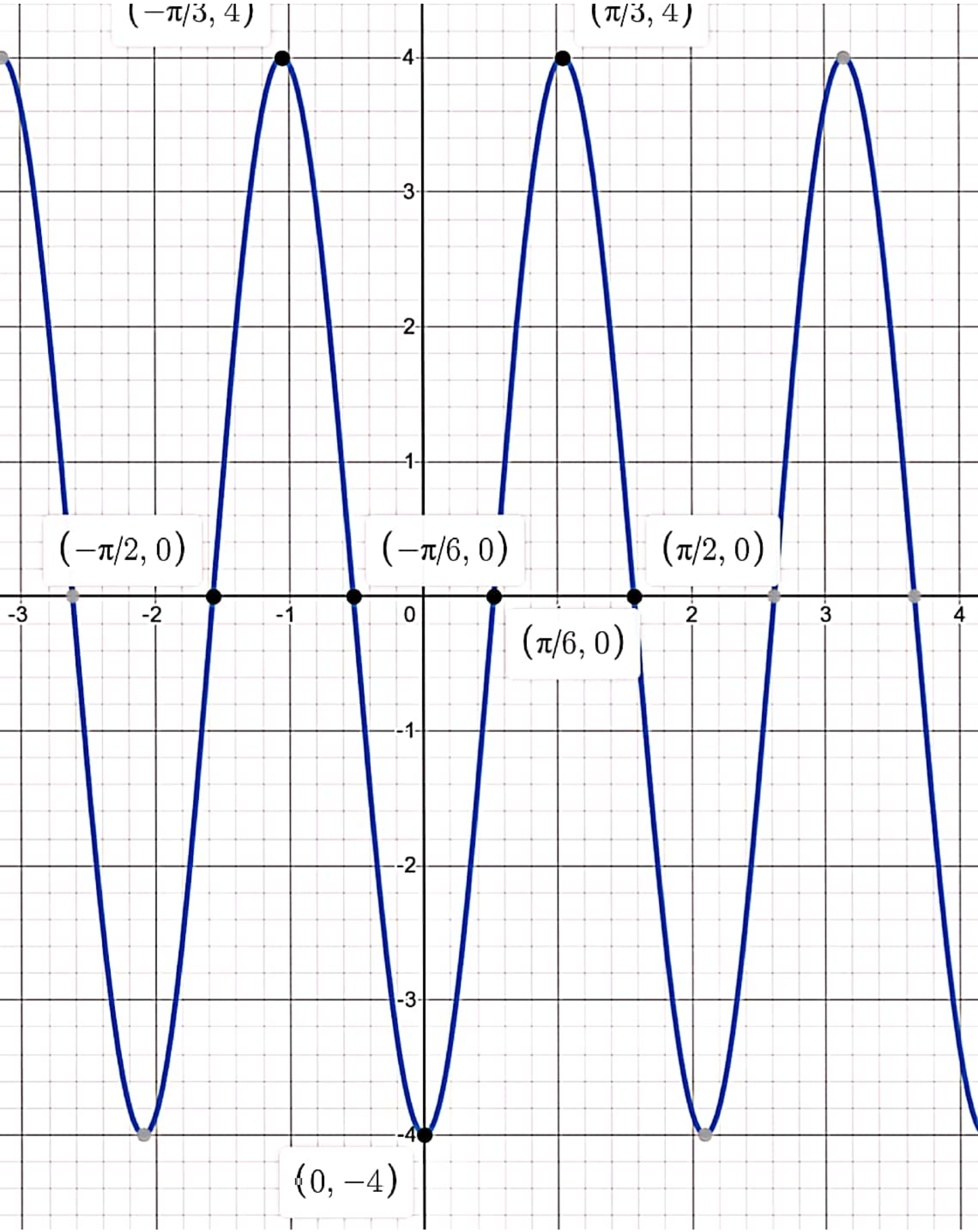

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Question 7

$y = 2\sin(4x + 2\pi) \Rightarrow y = 2\sin 4(x + \pi/2)$

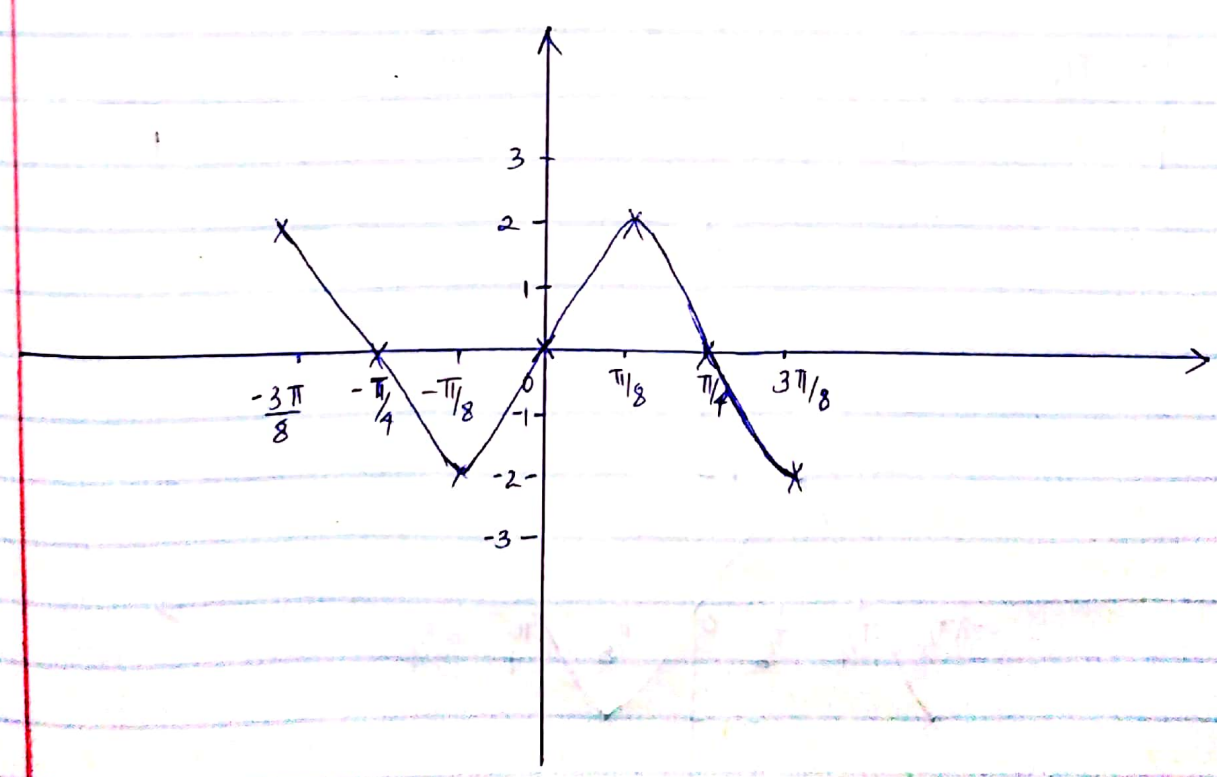
Amplitude : 2

Period: $\frac{2\pi}{4} = \frac{\pi}{2}$

Phase shift: $\frac{\pi}{2}$ to the left $(-\frac{\pi}{2})$

Sketch:

x	$-3\pi/8$	$-\pi/4$	$-\pi/8$	0	$\pi/8$	$\pi/4$	$3\pi/8$
y	2	0	-2	0	2	0	-2



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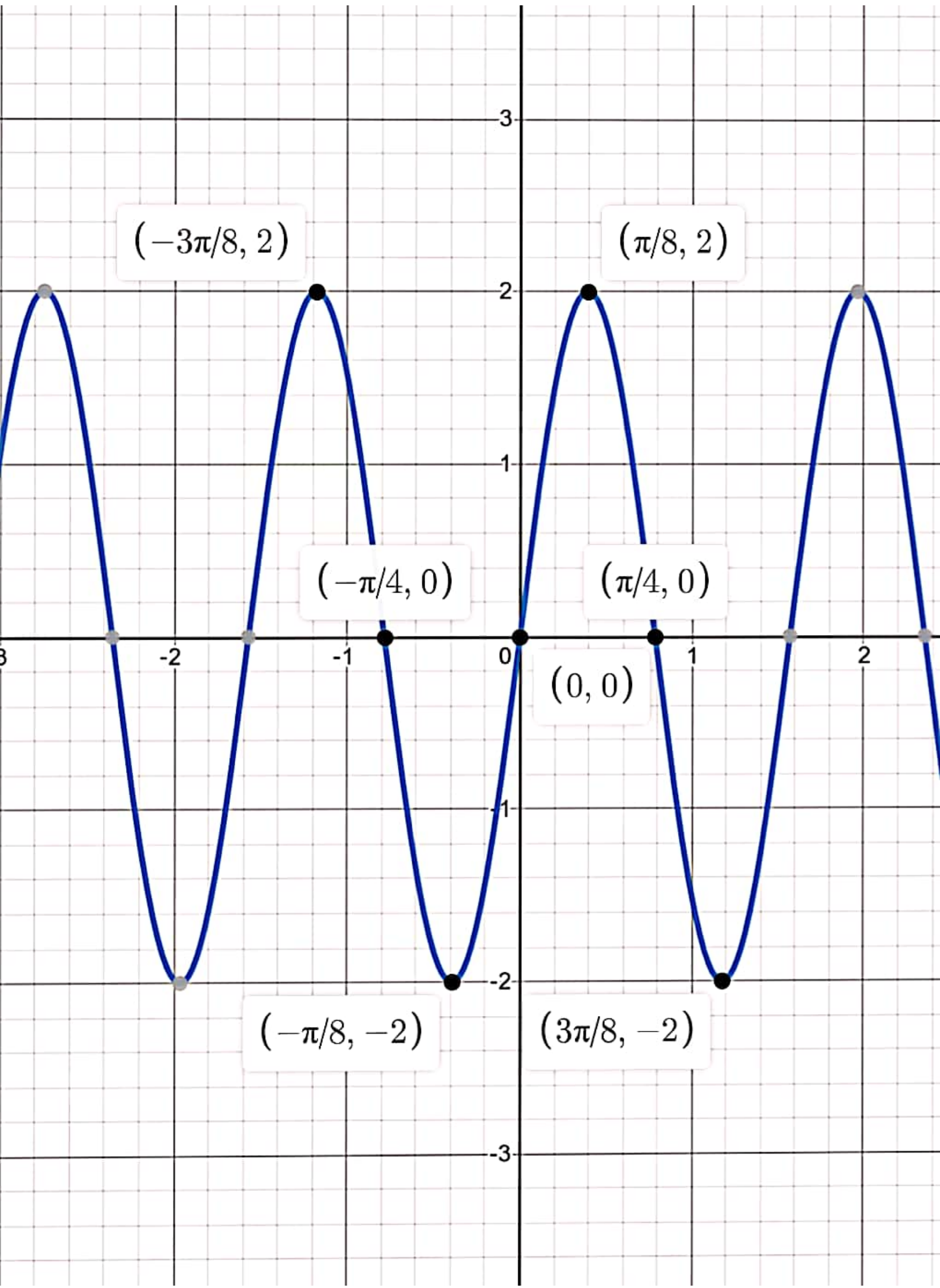

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Question 8

$y = \cos(4x - 270°) \Rightarrow y = \cos 4(x - \frac{135°}{2})$

Amplitude: 1

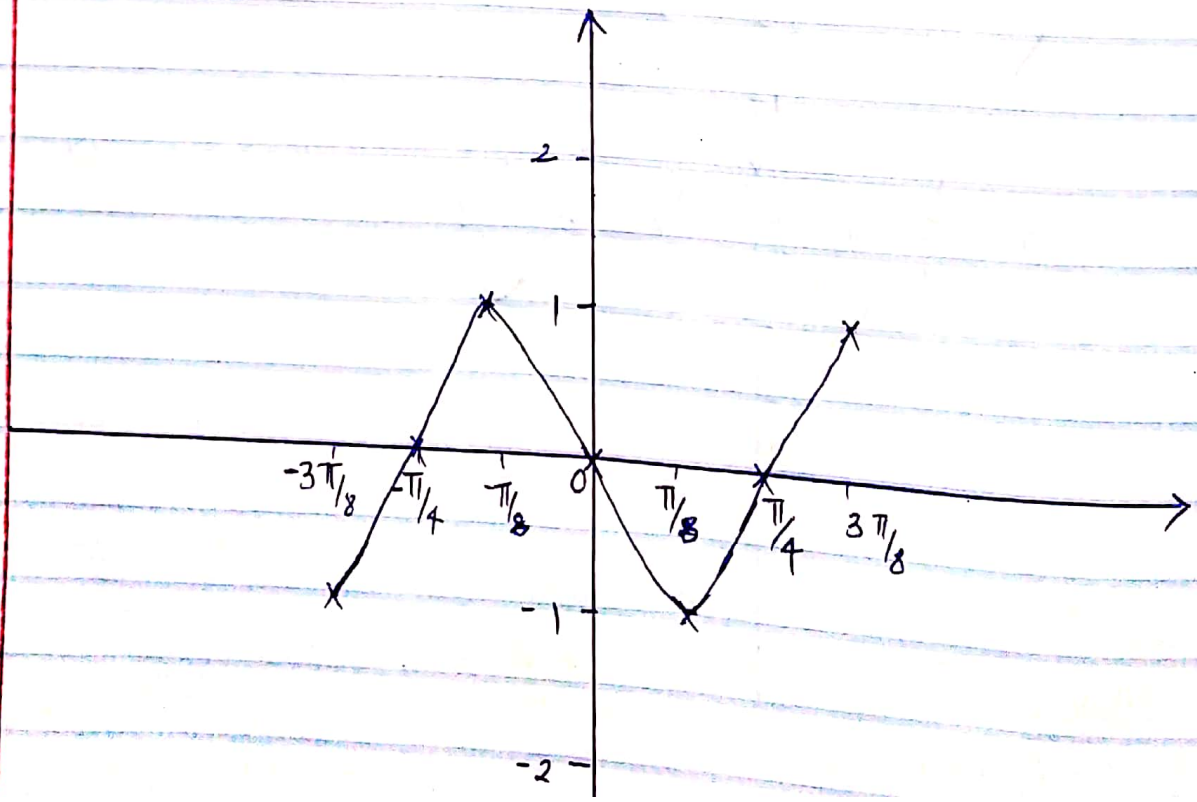
Period: $\frac{2\pi}{4} = \frac{\pi}{2}$

Phase shift: $\frac{135}{2}°$ to the right

Sketch

$y = \cos(4x - 3/2\,\pi)$

x	$-3\pi/8$	$-\pi/4$	$-\pi/8$	0	$\pi/8$	$\pi/4$	$3\pi/8$
y	-1	0	1	0	-1	0	1



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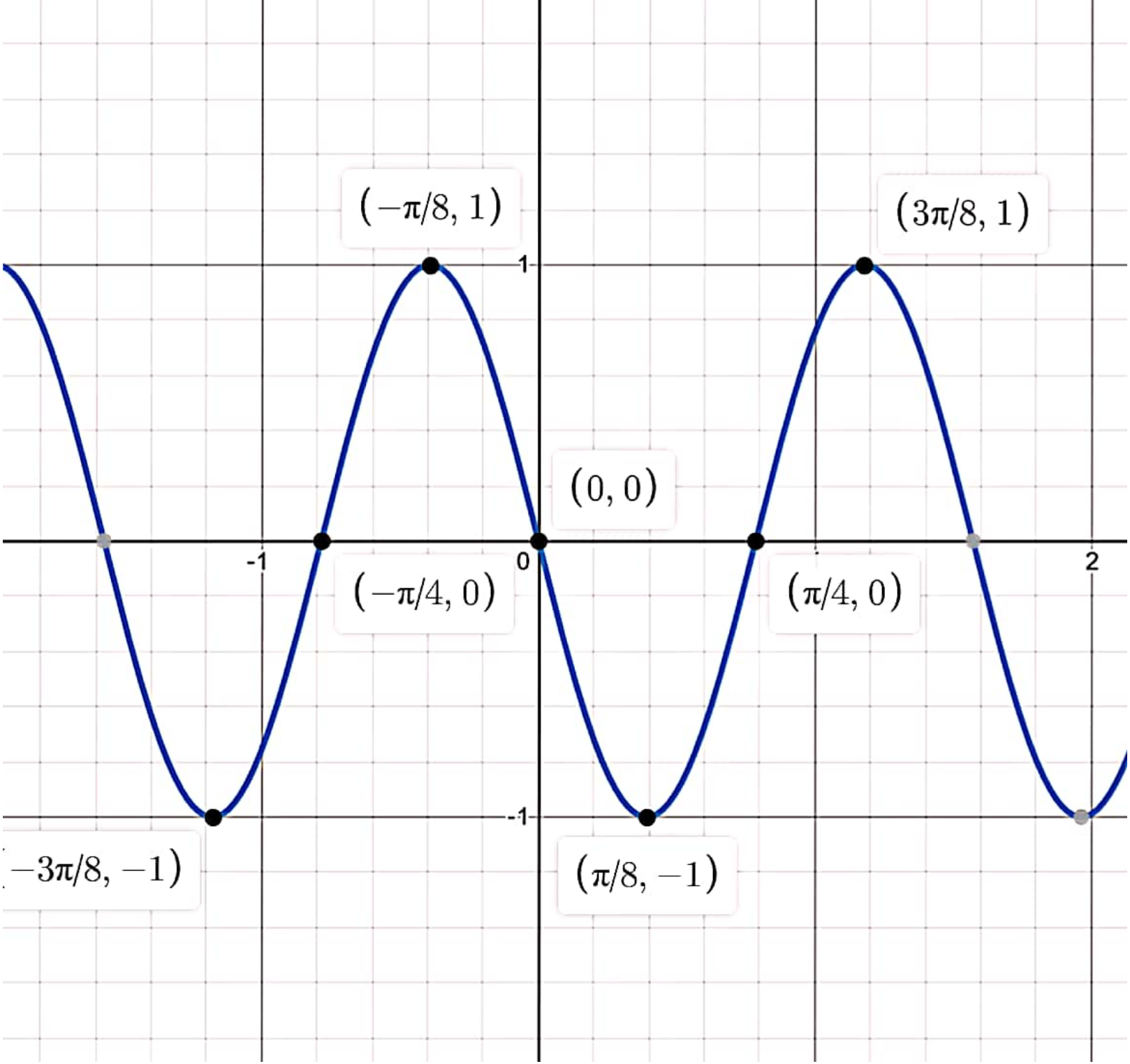

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