

4.5 Review Worksheet

Identify the amplitude, period, and phase shift of the given function.

1. $y = 3\cos\left(x + \frac{\pi}{4}\right) + 1$

Amplitude: 3

Period: $\frac{2\pi}{1} = 2\pi$

Phase shift: $-\frac{\pi}{4}$

2. $y = 5\sin\left(2x - \frac{\pi}{3}\right)$

$y = 5\sin 2\left(x - \frac{\pi}{6}\right)$

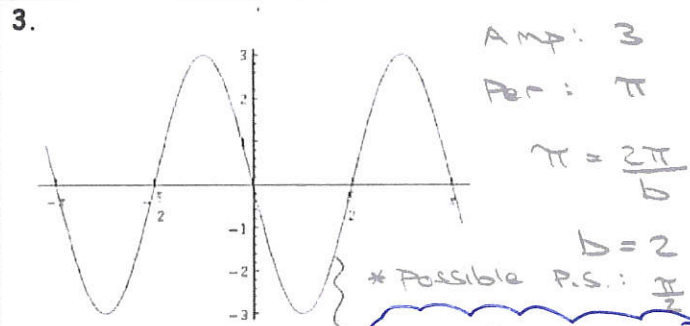
Amplitude: 5

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

Phase shift: $\frac{\pi}{6}$

Write the indicated function of each graph. Answers can vary.

← easiest



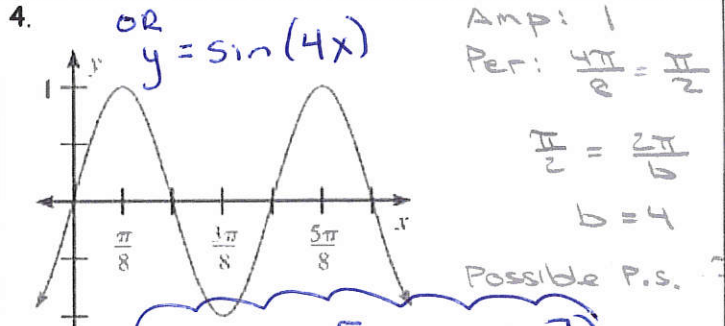
$y = -3\sin 2(x-0)$

$y = -3\sin 2x$
(Reflection)

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

$y = 3\sin(2x - \pi)$

Sine: _____



$y = 1\cos 4\left(x - \frac{\pi}{8}\right)$

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

Cosine: _____

Write the equation of a function with the given characteristics.

5. Cosine Function
Amplitude = 2
Period = $\frac{\pi}{3}$
Vertical shift = 1

Per = $\frac{2\pi}{6}$
 $\frac{\pi}{3} = \frac{2\pi}{6}$
b = 6

$y = 2\cos 6(x-0) + 1$

$y = 2\cos(6x) + 1$

6. Sine Function
Amplitude = 3
Period = 8π
Phase Shift = $\frac{\pi}{2}$

$8\pi = \frac{2\pi}{1/8}$
b = $\frac{1}{8}$

Reflection in the x-axis

$y = -3\sin\left[\frac{1}{8}\left(x - \frac{\pi}{2}\right)\right]$

$y = -3\sin\left(\frac{1}{8}x - \frac{\pi}{8}\right)$

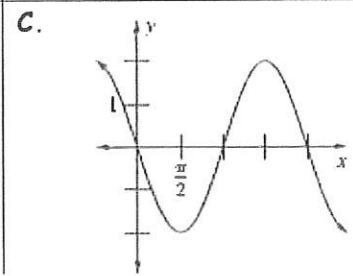
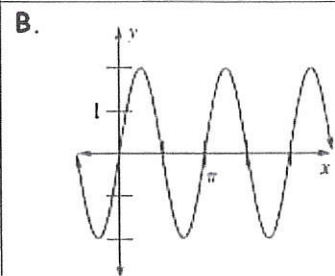
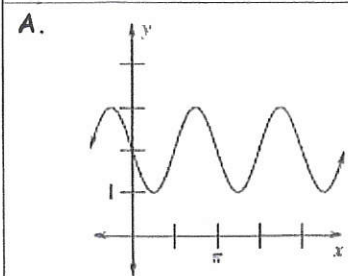
Match the function to its graph.

$y = -\sin(2x) + 2$

7. $y = 2\sin(2x)$ B.

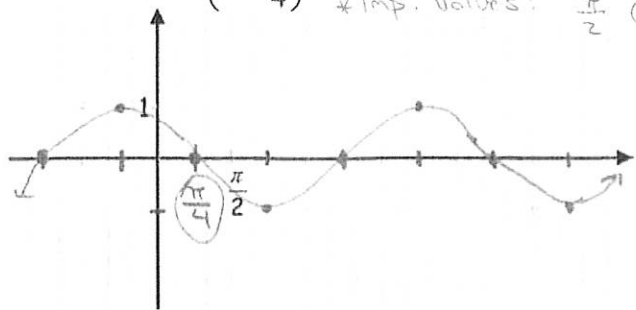
8. $y = 2 - \sin(2x)$ A.

9. $y = -2\sin x$ C.



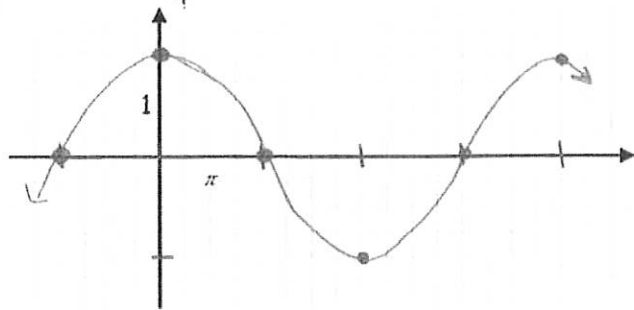
Graph each of the functions. Include all relative extrema and intercepts. Graph as many periods of the function that will fit on the grid provided. List the amplitude, period, phase shift, and vertical shift for each function.

10. $y = -\sin\left(x - \frac{\pi}{4}\right)$ * Reflection over x-axis
* Imp. Values: $\frac{\pi}{2}$ (3 boxes)



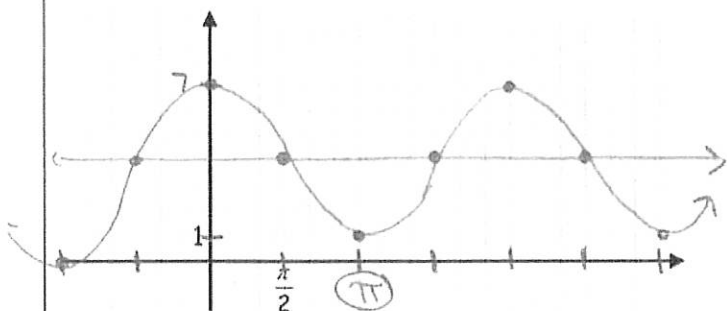
Amp: 1 Per: 2π PS: $\frac{\pi}{4}$ VS: 1

11. $y = 2\cos\frac{1}{4}x$ Imp. Values: 2π



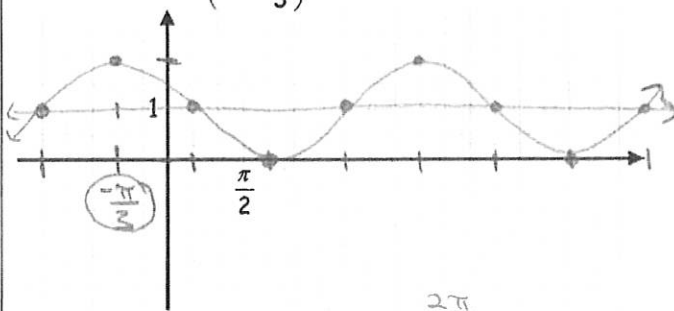
Amp: 2 Per: 8π PS: 0 VS: 0

12. $y = -3\cos(x - \pi) + 4$



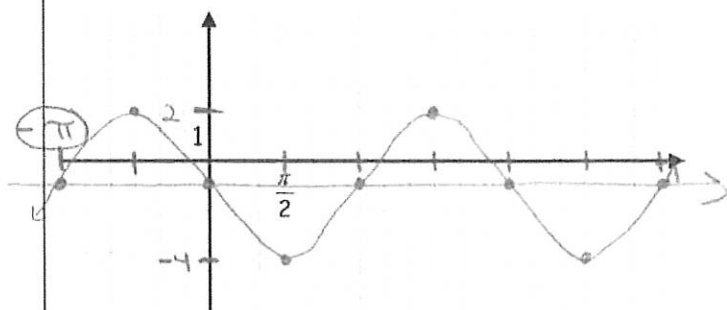
Amp: 3 Per: 2π PS: π VS: 4

13. $y = \cos\left(x + \frac{\pi}{3}\right) + 1$ Imp. Values: $\frac{\pi}{2} = \frac{3\pi}{6}$



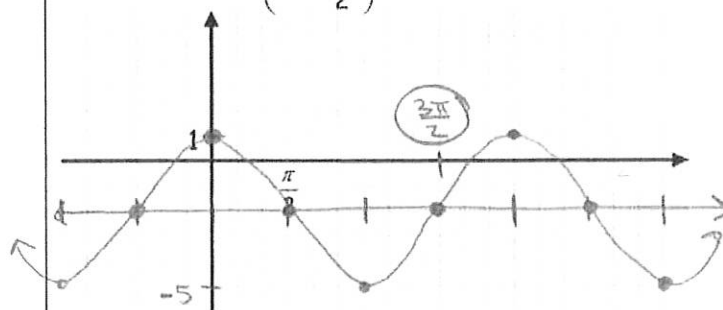
Amp: 1 Per: 2π PS: $-\frac{\pi}{3}$ VS: 1

14. $y = -1 + 3\sin(x + \pi)$



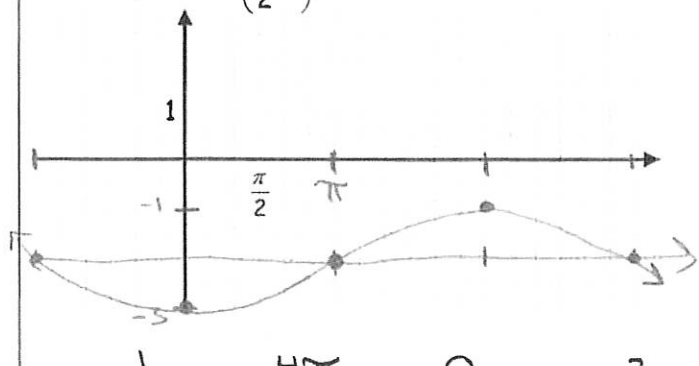
Amp: 3 Per: 2π PS: $-\pi$ VS: -1

15. $y = 3\sin\left(x - \frac{3\pi}{2}\right) - 2$



Amp: 3 Per: 2π PS: $\frac{3\pi}{2}$ VS: -2

16. $y = -\cos\left(\frac{1}{2}x\right) - 2$



17. $y = -2\cos\left(x + \frac{\pi}{6}\right)$

