Graph 1 period of the function without using your calculator.

A) $y = 3\sin\frac{x}{2}$

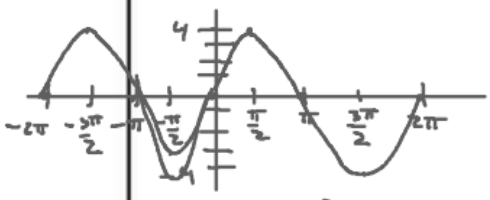
$y = 5\cos 2x$

Identify the maximum and minimum values and the zeros of the function in the interval $\cancel{[-2\pi, 2\pi]}$. Use your understanding of transformations, not your calculator.

$-6\pi, 6\pi$

$B = \frac{1}{3}$

A) y = 4 sin x

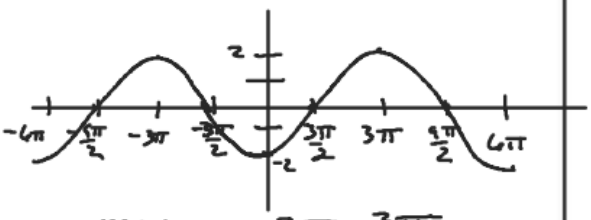


max → $-\frac{3\pi}{2}, \frac{\pi}{2}$

min → $-\frac{\pi}{2}, \frac{3\pi}{2}$

zeros, $-2\pi, -\pi, 0, \pi, 2\pi$

B) $y = -2\cos\frac{x}{3}$



max → $-3\pi, 3\pi$

min → $-6\pi, 0, 6\pi$

zeros → $-\frac{9\pi}{2}, -\frac{3\pi}{2}, \frac{3\pi}{2}, \frac{9\pi}{2}$

$y = (x-2)^2 + 3$

$y = A\cos B(x-c)$

$y = A\sin B(x-c)$

Horizontal shift

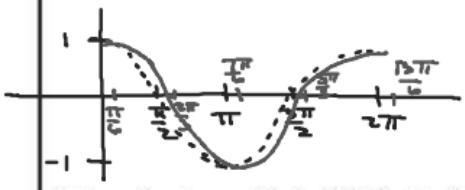
Determine the phase shift for the function and the sketch the graph.

A) $y = \cos\left(x - \frac{\pi}{6}\right)$

Amp = 1

Per = 2π

P.S. $\frac{\pi}{6}$ Right

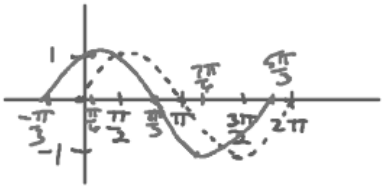


B) $y = \sin\left(x + \frac{\pi}{3}\right)$

Amp = 1

Per 2π

P.S. $\frac{\pi}{3}$ Left



$y = A\cos B(x-c) + D$

$y = A\sin B(x-c) + D$

Determine the vertical shift for the function and the sketch the graph.

A) $y = \cos x - 2$

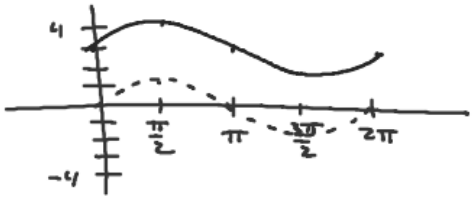
Amp = 1

Per = 2π

P.S. None

V.S. Down 2

B) $y = \sin x + 3$



Determine the vertical shift and phase shift of the function and then sketch the graph

A) $y = \cos\left(x + \frac{\pi}{6}\right) - 1$

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

State the Amplitude and period of the sinusoid, and relative to the basic function, the phase shift and vertical translation.

$-2\cos 3\left(x-\frac{\pi}{12}\right)-4$

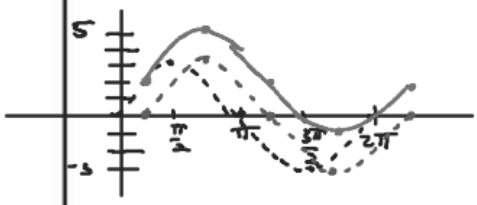
A) $y=3\sin\left(x-\frac{\pi}{4}\right)+2$

Amp = 3

Per = $\frac{2\pi}{B} = \frac{2\pi}{1} = 2\pi$

P.S = Right $\frac{\pi}{4}$

V.S. up 2



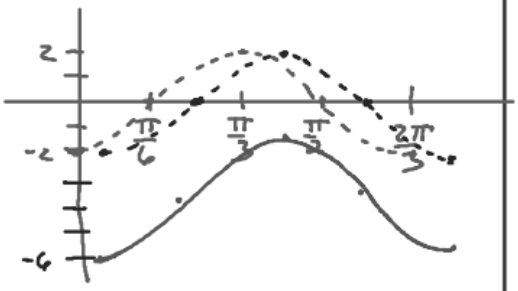
B) $y=-2\cos\left(3x-\frac{\pi}{4}\right)-4$

Amp = 2

Per = $\frac{2\pi}{B} = \frac{2\pi}{3}$

P.S. Right $\frac{\pi}{12}$

V.S. Down 4



C) $y=5\sin 4\pi x+6$

Amp = 5

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

P.S. None

V.S. up 6