

Graph the following

1)  $y = 4 \sin(2x - \pi)$

2)  $y = 2 \cos(4x + 3\pi)$

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

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

1)  $y = 4 \sin(2x - \pi)$

$a = 4$

Amp = 4

$\omega = 2$

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

$\phi = \pi$

P.S. =  $\frac{\pi}{2}$

$\left(\frac{\pi}{2}, 0\right), \left(\frac{3\pi}{4}, 4\right), (\pi, 0), \left(\frac{5\pi}{4}, -4\right), \left(\frac{3\pi}{2}, 0\right)$

$\frac{1}{2}\left(\frac{\pi}{2} + \pi\right)$

$\frac{1}{2}\left(\frac{3\pi}{2}\right)$

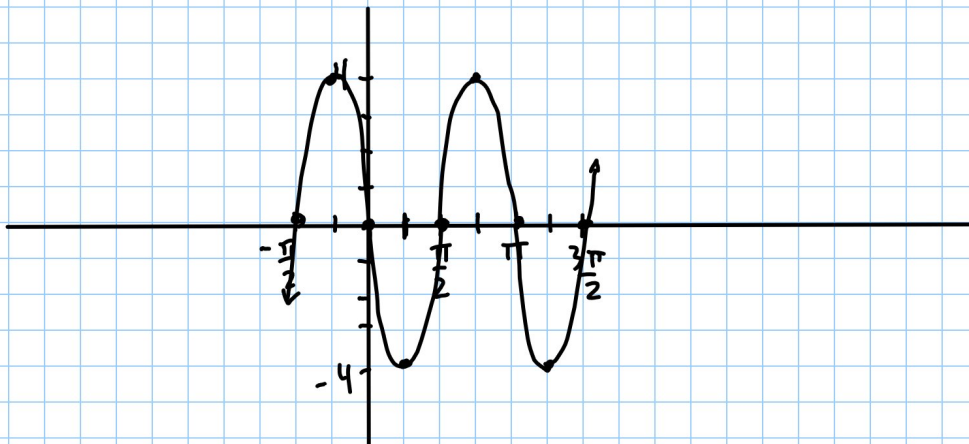
$\frac{1}{2}\left(\frac{\pi}{2} + \frac{3\pi}{2}\right)$

$\frac{1}{2}\left(\frac{4\pi}{2}\right)$

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

$\frac{1}{2}\left(\pi + \frac{3\pi}{2}\right)$

$\frac{1}{2}\left(\frac{5\pi}{2}\right)$



2)  $y = 2 \cos(4x + 3\pi)$

$a = 2$

Amp = 2

$\omega = 4$

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

$\phi = -3\pi$

P.S. =  $-\frac{3\pi}{4}$

$\left(-\frac{3\pi}{4}, 2\right), \left(-\frac{5\pi}{8}, 0\right), \left(-\frac{\pi}{2}, -2\right), \left(-\frac{3\pi}{8}, 0\right), \left(-\frac{\pi}{4}, 2\right)$

$\frac{1}{2}\left(-\frac{3\pi}{4} + \frac{-\pi}{2}\right)$

$-\frac{3}{4} + \left(-\frac{1}{4}\right)$  enter  
 $\div 2$  FRAC

$-\frac{3\pi}{4} + \frac{\pi}{2} = -\frac{3\pi}{4} + \frac{2\pi}{4}$

$\frac{1}{2}\left(-\frac{3\pi}{4} + \frac{-2\pi}{4}\right)$

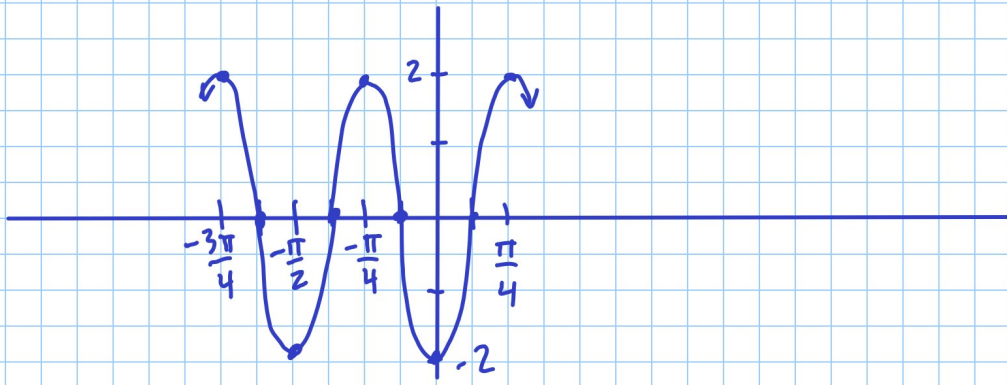
$\frac{1}{2}\left(-\frac{3\pi}{4} + \frac{-\pi}{4}\right) = \frac{1}{2}\left(\frac{-4\pi}{4}\right)$   
 $= -\frac{\pi}{2}$

on calc

$-3/4 + 1/2$  enter

Math FRAC enter  
 $-1/4$

$\frac{1}{2}\left(-\frac{5\pi}{4}\right) = -\frac{5\pi}{8}$



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

$$a = -2$$

$$\text{Amp} = 2$$

$$\omega = \pi$$

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

$$\phi = -\frac{\pi}{4}$$

$$\text{P.S.} = \frac{-\frac{\pi}{4}}{-\frac{\pi}{1}} = \frac{-\frac{\pi}{4}}{-\pi} = \frac{1}{4}$$

$$\left(-\frac{1}{4}, -2\right), \left(\frac{1}{4}, 0\right), \left(\frac{3}{4}, 2\right), \left(\frac{5}{4}, 0\right), \left(\frac{7}{4}, -2\right)$$

$$\frac{1}{2}\left(-\frac{1}{4} + \frac{3}{4}\right)$$

$$= \frac{1}{2}\left(\frac{2}{4}\right) = \frac{1}{4}$$

$$\frac{1}{2}\left(-\frac{1}{4} + \frac{7}{4}\right) = \frac{1}{2}\left(\frac{6}{4}\right) = \frac{3}{4}$$

$$-\frac{1}{4} + 2 = -\frac{1}{4} + \frac{8}{4} = \frac{7}{4}$$

$$\frac{1}{2}\left(\frac{3}{4} + \frac{7}{4}\right) = \frac{1}{2}\left(\frac{10}{4}\right) = \frac{5}{4}$$

