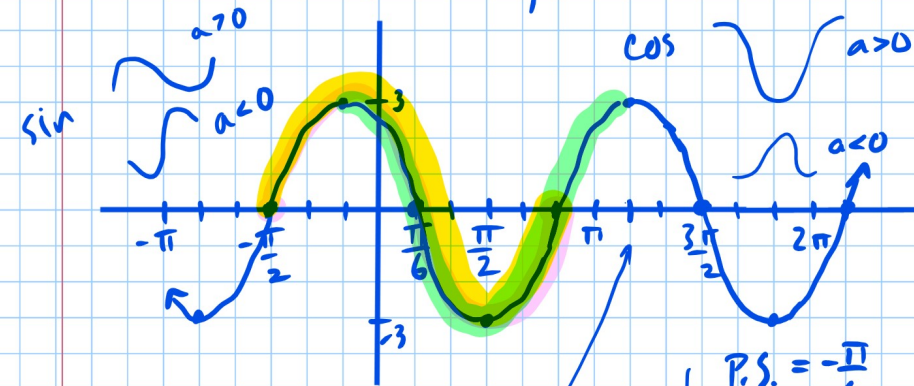


WARMUP - Highlight one period, determine whether sine or cosine, then find the equation



Amp = 3  $\Rightarrow$  a = 3  
 Period  $-\frac{\pi}{6} \rightarrow \frac{7\pi}{6}$   
 $\frac{7\pi}{6} - (-\frac{\pi}{6}) = \frac{8\pi}{6} = \frac{4\pi}{3}$



P.S. =  $-\frac{\pi}{6}$   
 $\frac{6\pi}{6} + \frac{\pi}{6} = \frac{7\pi}{6}$   
 $\frac{\phi}{\frac{3}{2}} = -\frac{\pi}{6}$   
 $\phi = -\frac{\pi}{6} \cdot \frac{2}{2} = -\frac{\pi}{3}$   
 $\phi = -\frac{\pi}{4}$   
 $\frac{2\pi}{\omega} > \frac{4\pi}{3}$   
 $\frac{\omega \cdot 4\pi}{4\pi} = \frac{2\pi \cdot 3}{2 \cdot 4\pi} = \omega = \frac{3}{2}$   
 $y = a \cos(\omega x - \phi)$

Assignment

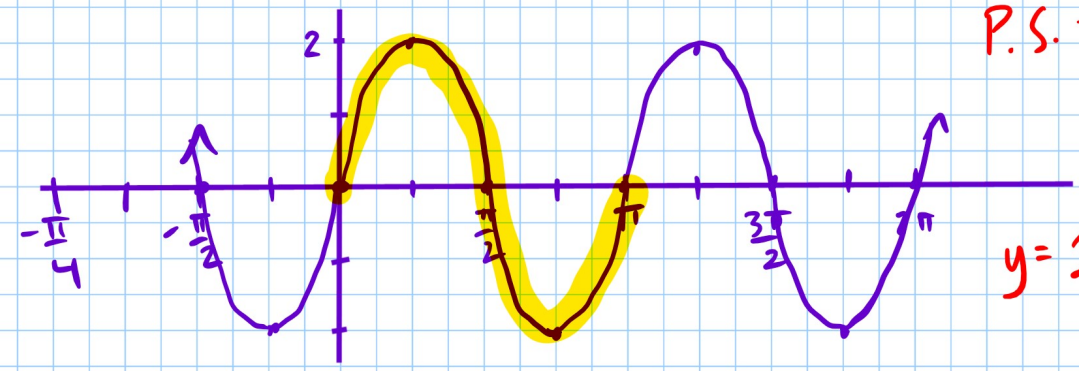
In 1-2, list the 5 points and graph

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

3) Find an equation for the graph

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

a = 2  
 Period =  $\frac{\pi}{1} = \frac{2\pi}{\omega}$   
 $\omega \pi = 2\pi$   
 $\omega = 2$   
 P.S. = 0 =  $\frac{\phi}{2}$   
 $\phi = 0$



$y = 2 \sin(2x)$

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

a = -2      Amp = 2  
 $\omega = \pi$       Period =  $\frac{2\pi}{\pi} = 2$   
 $\phi = -\frac{\pi}{4}$       P.S. =  $\frac{-\frac{\pi}{4}}{\pi} = -\frac{\pi}{4} \cdot \frac{1}{\pi} = -\frac{1}{4}$

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

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

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

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

$$-\frac{1}{4} + 2 = \frac{7}{4} \text{ p.s.} + \text{Period}$$

