

Find the reflection(s), amplitude, period, phase shift, and vertical shift as appropriate:

1.  $y = 3 \sin 2x$  A: 3 period:  $\pi$

2.  $y = \frac{5}{2} \cos \frac{1}{2} x$  A:  $5/2$  peri:  $4\pi$

3.  $y = \frac{1}{2} \sin \frac{\pi}{3} x$  A:  $1/2$  peri: 6

4.  $y = -3 \cos \frac{1}{3} x$  ref: yes a: 3 per:  $6\pi$

5.  $y = \frac{2}{3} \sin(+\frac{\pi}{10} x)$  a:  $2/3$  per: 20

6.  $y = \sin x - 3$  a: 1 per:  $2\pi$  vs: down 3

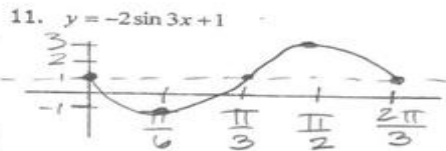
7.  $y = \cos(x - \pi)$  a: 1 per:  $2\pi$  p.s.:  $+\pi$

8.  $y = -\sin 2x + 4$  ref: yes a: 1 per:  $\pi$  vs: up 4

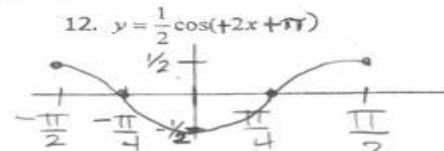
9.  $y = -\cos(2x - 4)$  ref: yes a: 1 per:  $\pi$  p.s.: 2

10.  $y = 4 \sin \pi x - 3$  a: 4 per: 2 vs: down 3

Sketch one fundamental period of each on the graph provided:



ref:  $\checkmark$   
a: 2  
p:  $2\pi/3$   
ps: none  
vs: up 1



ref: no  
a:  $1/2$   
p:  $\pi$   
ps:  $-\pi/2$   
vs: none