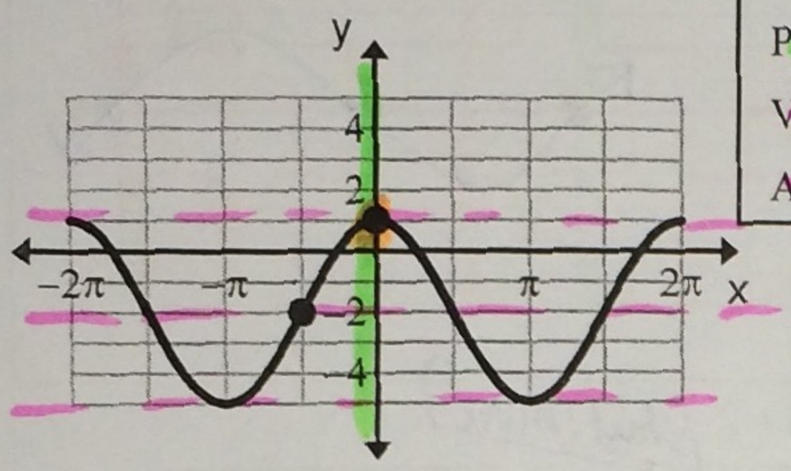
#1 B

Pre-Calculus Worksheet Name: _____ Key

Transformations of Sine and Cosine #1 Period: ____

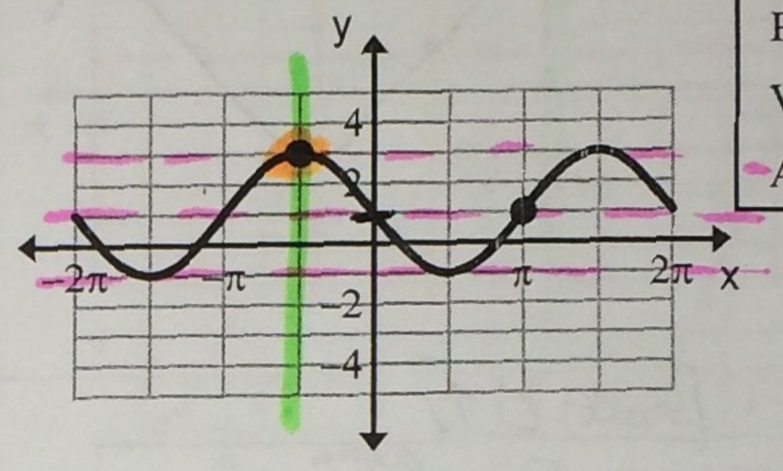
Write the equation for each graph for COSINE.

1. $y =$ $3\cos x - 2$



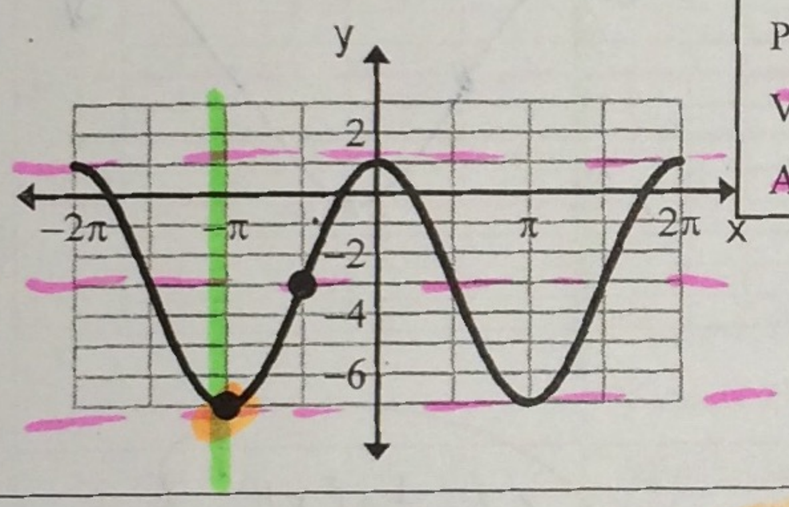
Flip no
Period: 2π ; b=1
Phase shift 0
Vertical Shift −2
Amplitude up 3

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



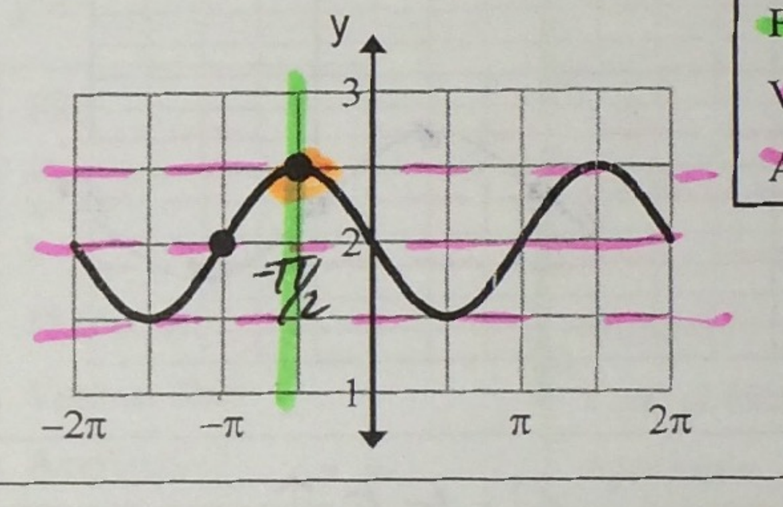
Flip no
Period: 2π ; b=1
Phase shift left $\frac{\pi}{2}$
Vertical Shift up 1
Amplitude 2

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



Flip yes "−"
Period: 2π ; b=1
Phase shift left π
Vertical Shift down 3
Amplitude 4

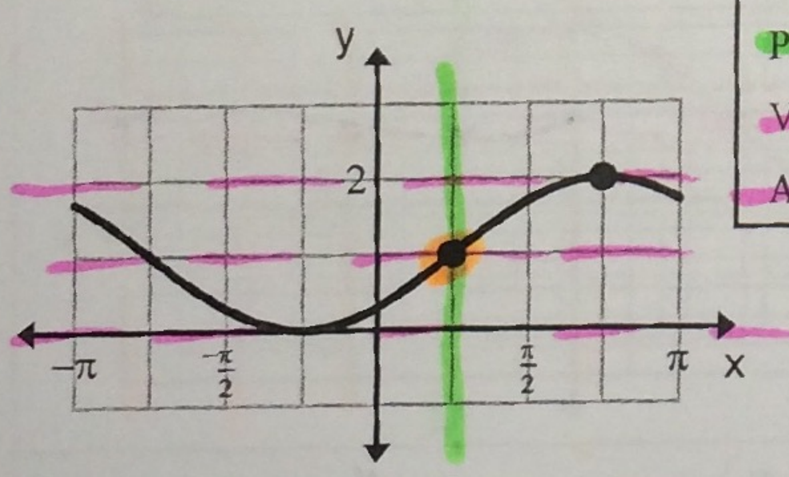
4. $y =$ $\cos\left(x+\frac{\pi}{2}\right)+2$



Flip no
Period: 2π ; b=1
Phase shift left $\frac{\pi}{2}$
Vertical Shift 2
Amplitude 1

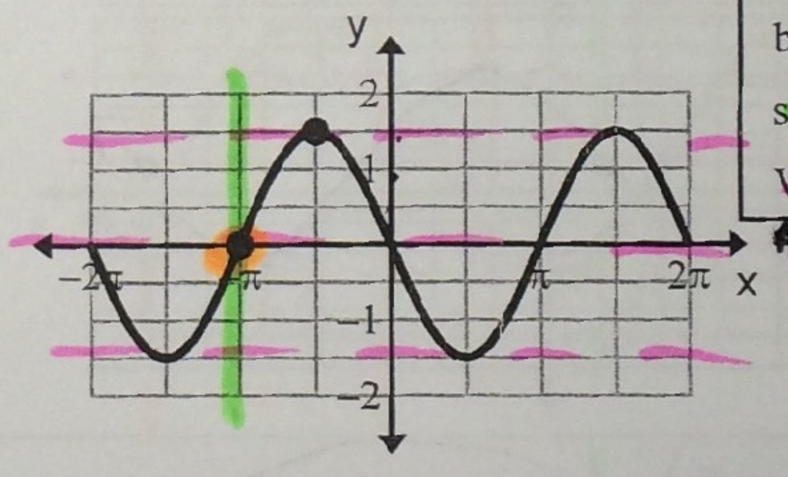
Write the equation for each graph for SINE.

5. $y =$ $\sin\left(x-\frac{\pi}{4}\right)+1$



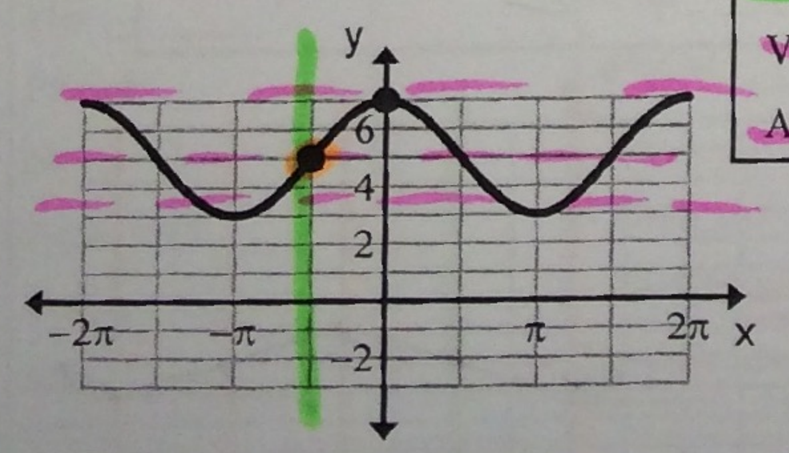
Flip NO
Period: 2π ; b=1
Phase shift Rt $\frac{\pi}{4}$
Vertical Shift 1
Amplitude 1

6. $y =$ $\frac{3}{2}\sin(x+\pi)$



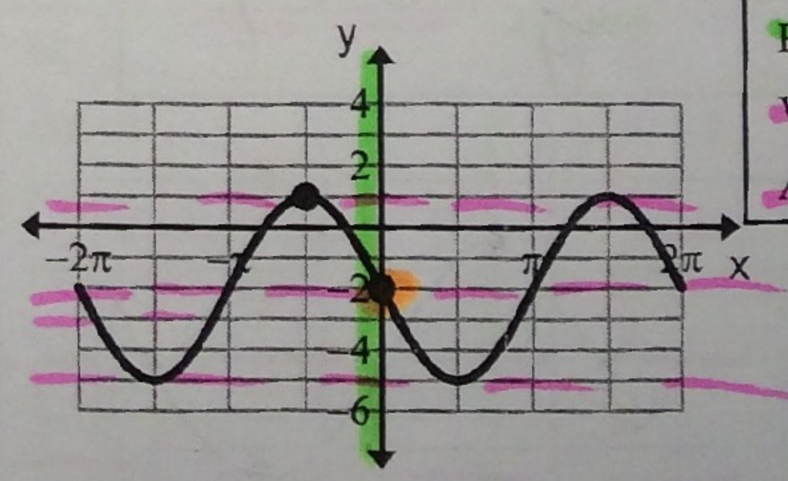
Flip NO
Period: 2π ;
b=1 Phase shift left π
Vertical Shift 0
Amplitude $\frac{3}{2}$

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



Flip no
Period: 2π ; b=1
Phase shift left $\frac{\pi}{2}$
Vertical Shift up 5
Amplitude 2

8. $y =$ $-3\sin x - 2$



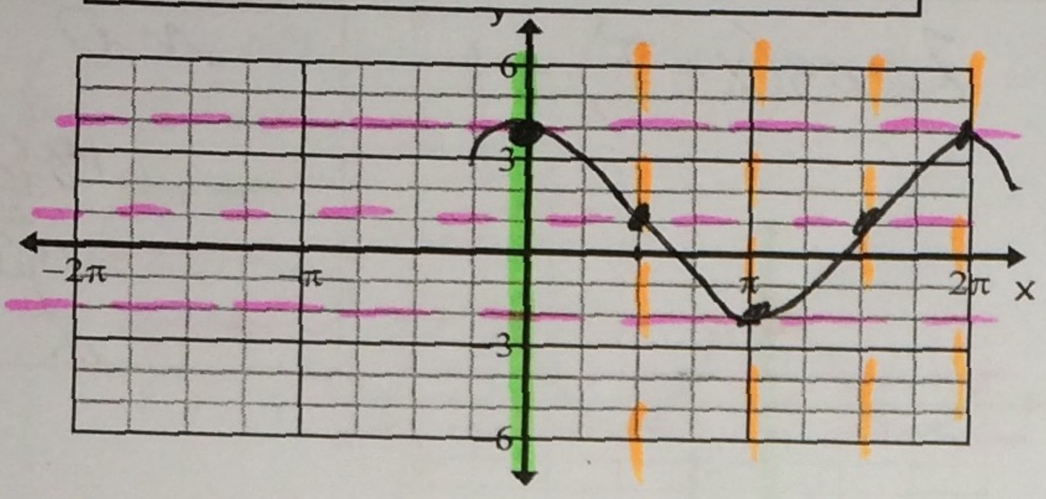
Flip yes "−"
Period: 2π ; b=1
Phase shift 0
Vertical Shift down 2
Amplitude 3

#1B

Graph each of the following sine or cosine transformations over ONE PERIOD.

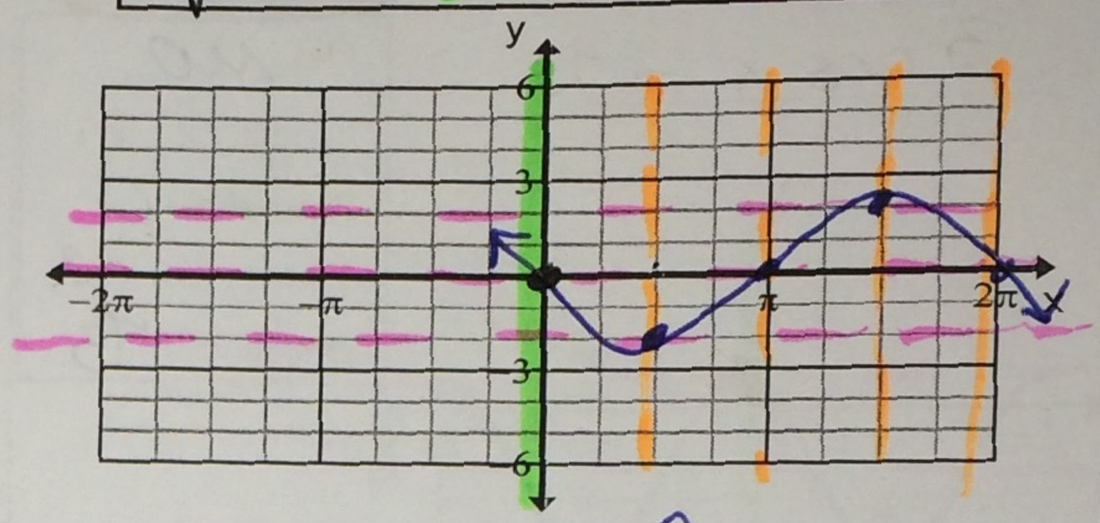
13. $y = 3\cos x + 1$ start MAX

F NO Pd:2π PS 0 VS up 1 A 3



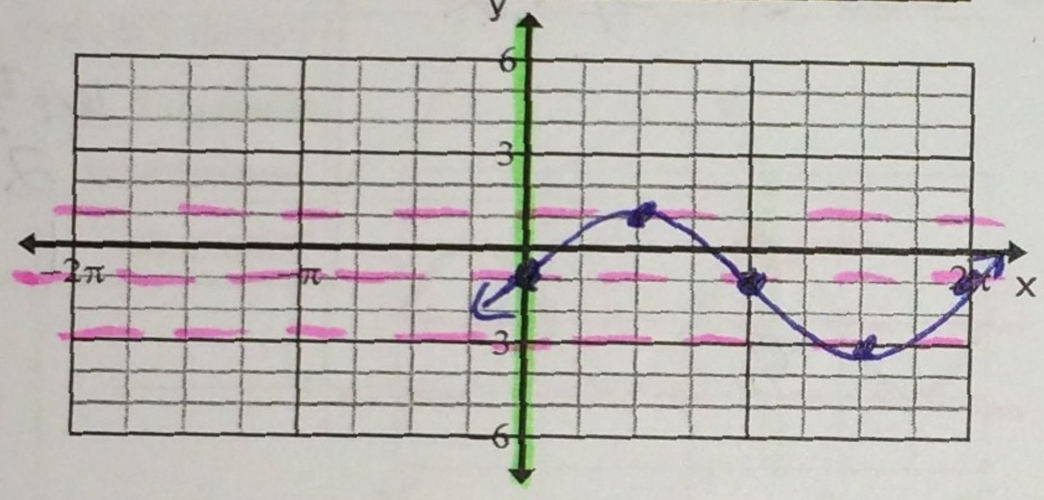
14. $y = -2\sin(x)$ start "0" ↓

F yes Pd:2π PS 0 VS 0 A 2



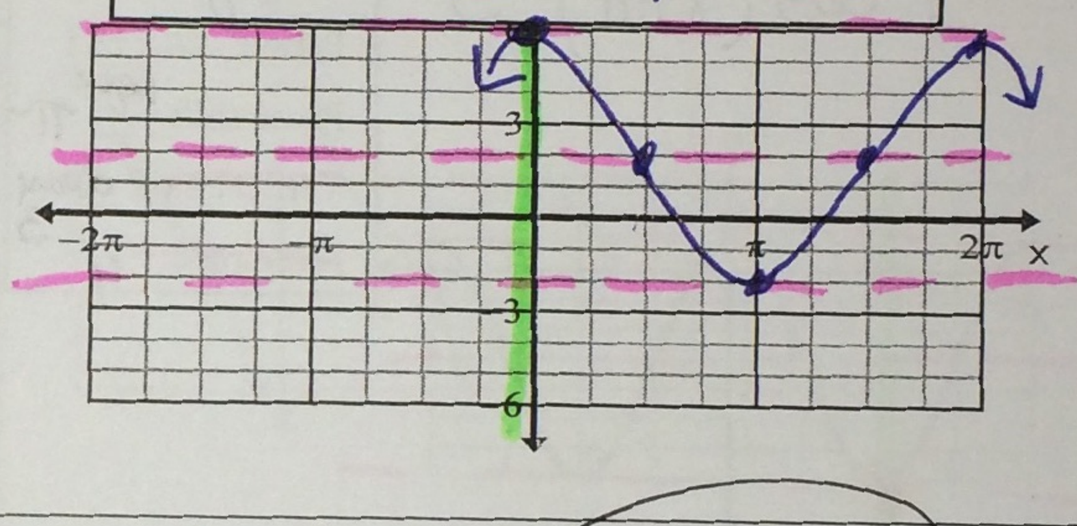
15. $y = 2\sin x - 1$ start: "0" ↑

F NO Pd:2π PS 0 VS down 1 A 2



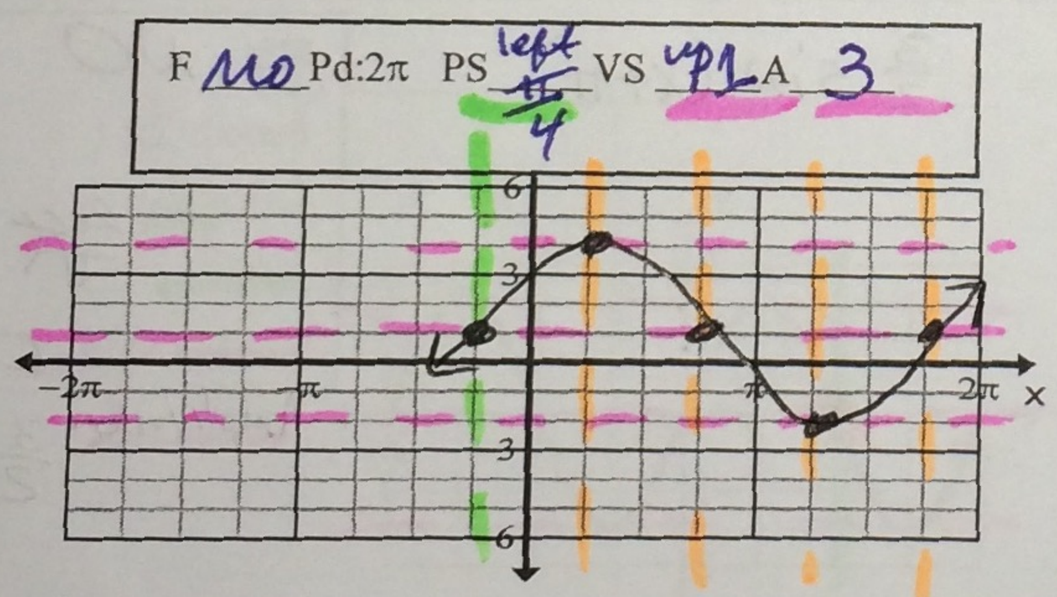
16. $y = 4\cos(x) + 2$ start: MAX

F NO Pd:2π PS 0 VS up 2 A 4



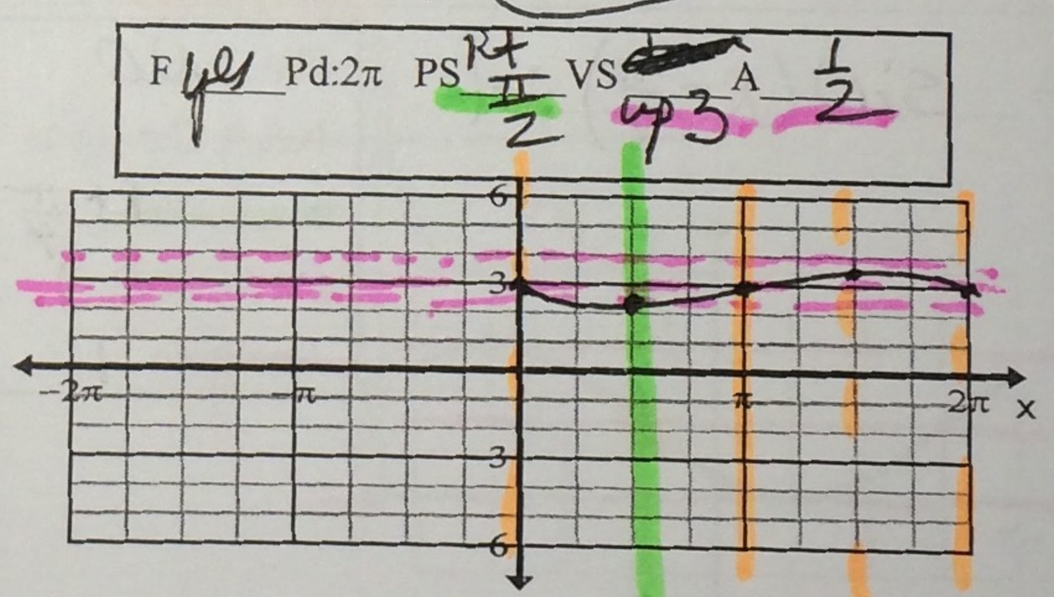
17. $y = 3\sin\left(x + \frac{\pi}{4}\right) + 1$ start "0" ↑

F NO Pd:2π PS left $\frac{\pi}{4}$ VS up 1 A 3



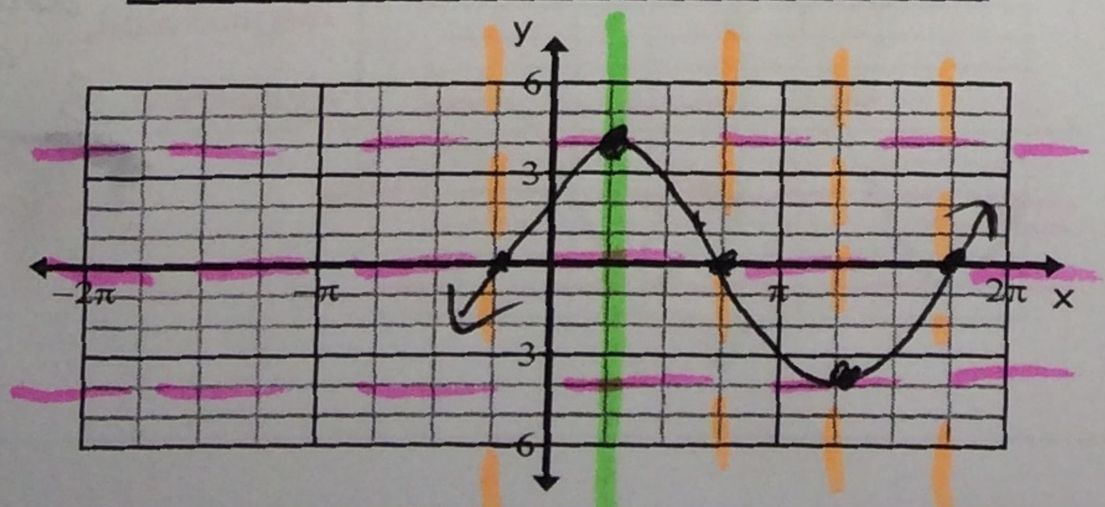
18. $y = -\frac{1}{2}\cos\left(x - \frac{\pi}{2}\right) + 3$ start MIN

F yes Pd:2π PS Rt $\frac{\pi}{2}$ VS up 3 A $\frac{1}{2}$



19. $y = 4\cos\left(x - \frac{\pi}{4}\right)$ start MAX

F NO Pd:2π PS Rt $\frac{\pi}{4}$ VS 0 A 4



20. $y = \sin\left(x - \frac{\pi}{2}\right) - 2$ start: "0"

F NO Pd:2π PS Rt $\frac{\pi}{2}$ VS down 2 A 1