

## DRILL

① What is the midline equation and amplitude of:

$$f(x) = -3 \sin(x + \pi) - 6$$

$y = -6$   
 $a = 3$

reflect over x-axis  
left  $\pi$   
down

② What is the min & max of that same function?

$$\text{min: } -9$$

$$\text{max: } -3$$

Period for sin & cos functions :

$$y = a \sin (bx + d) + c$$

$$y = a \cos (bx + d) + c$$

$$\frac{2\pi}{b}$$

Ex: 1

Ex:

$$① \quad y = -2 \sin (4x + 3) - 2$$

$$\text{period is: } \frac{2\pi}{4} = \frac{\pi}{2}$$

$$② \quad y = 5 \cos \left( \frac{x}{2} - \pi \right) + 4$$

$$\text{period is: } \frac{2\pi}{\left(\frac{1}{2}\right)} = 4\pi$$

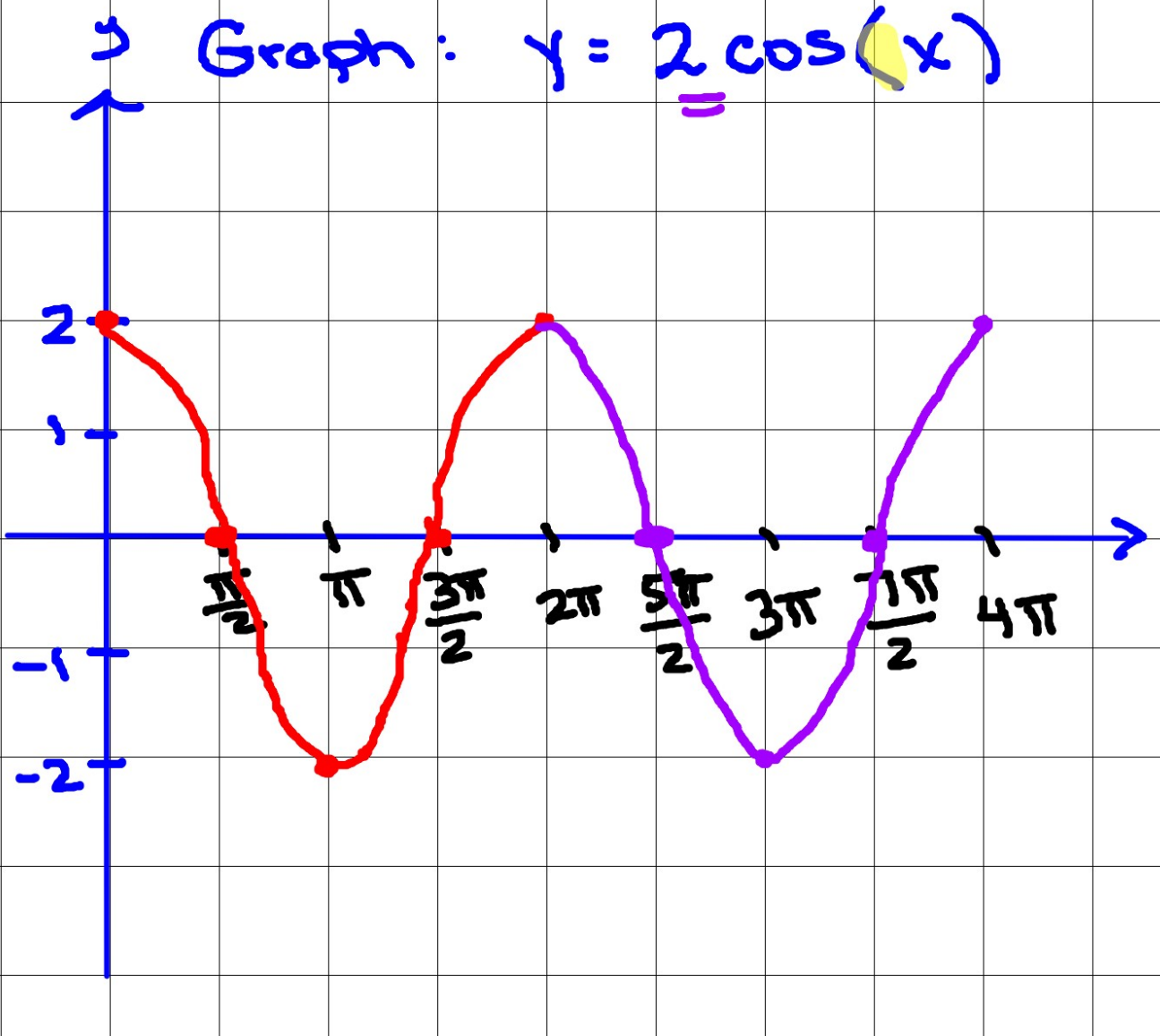
Ex: ③  $y = \cos(6x - \frac{\pi}{2}) - 4$

period:  $\frac{2\pi}{b} = \frac{2\pi}{6} = \frac{\pi}{3}$

④  $y = 2 \sin(\frac{x}{3} + \pi) + 10$

$\frac{2\pi}{(\frac{1}{3})} = 2\pi(3) = 6\pi$

Graph:  $y = 2 \cos(x)$



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

