

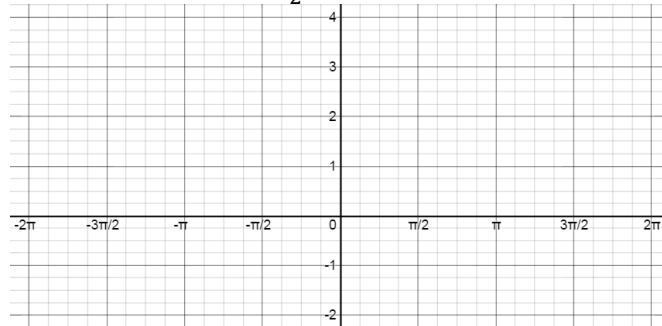
# Graphing Sines and Cosines

Name \_\_\_\_\_

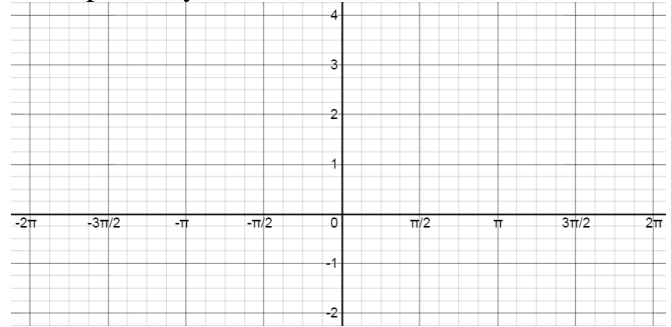
## Putting it all Together

For  $y = d + a \sin (bx - c)$  and  $y = d + a \cos (bx - c)$ ,  $d$  translates the graph up or down, and  $a$ , the amplitude, vertically stretches or shrinks the graph. The constant  $c$  translates the graph horizontally and  $\frac{2\pi}{b}$  is the period of the curve – the interval required to complete one full sine or cosine cycle.

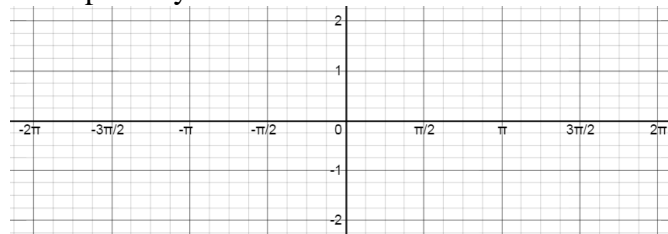
Example 1:  $y = 3 + \frac{1}{2}\sin(x - \pi)$



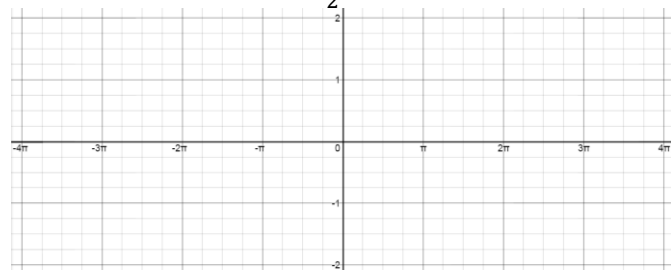
Example 2:  $y = 1 - 2 \cos x$



Example 3:  $y = \cos 3x$

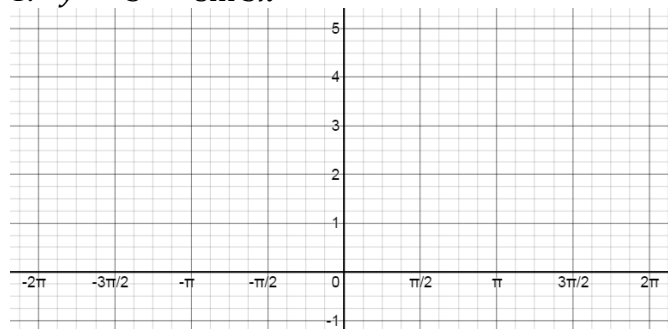


Example 4:  $f(x) = -\sin \frac{x}{2}$

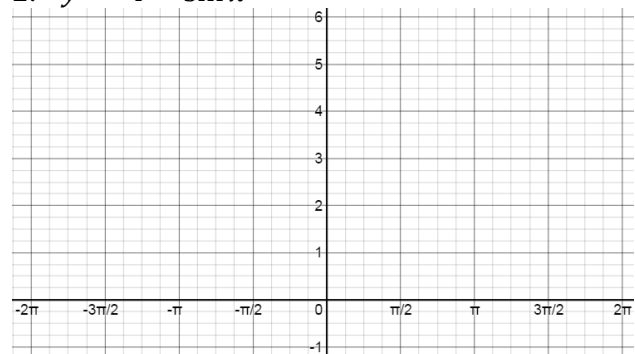


**Graph the following.**

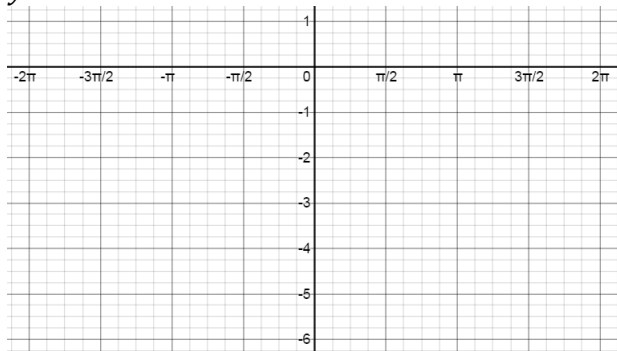
1.  $y = 3 - \sin 3x$



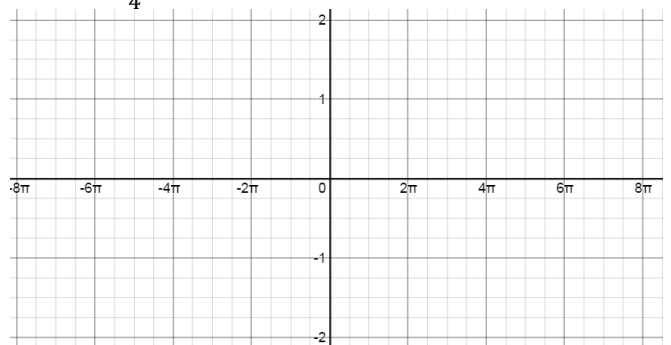
2.  $y = 4 - \sin x$



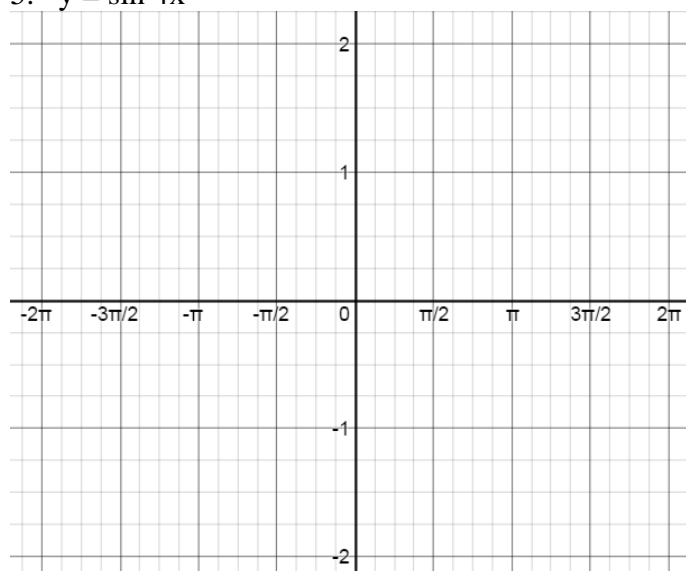
3.  $y = 2 \cos x - 3$



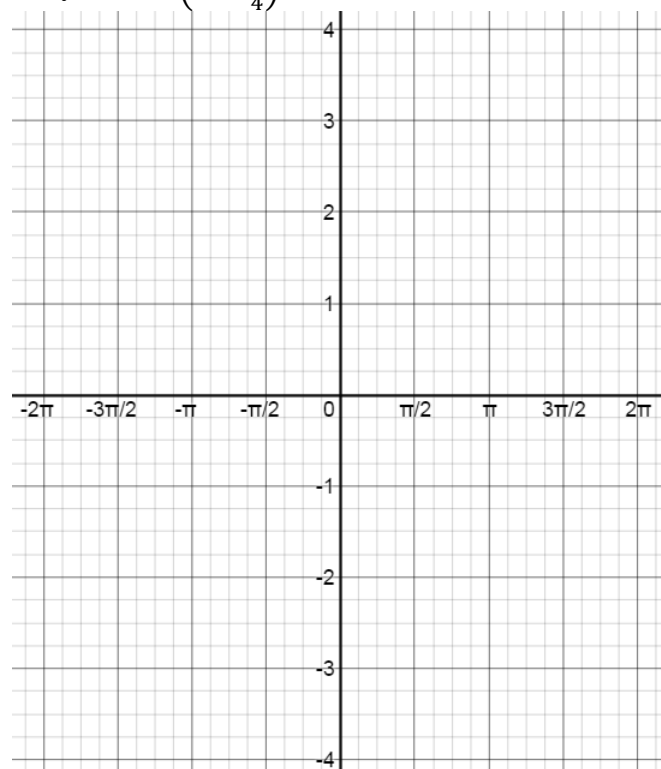
4.  $y = \cos \frac{x}{4}$



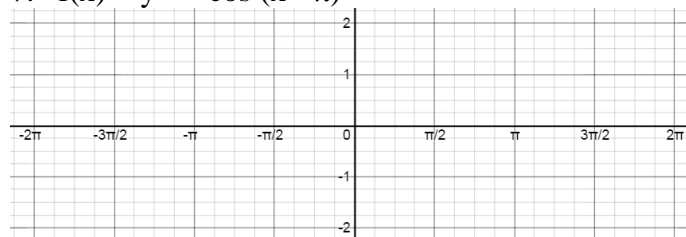
5.  $y = \sin 4x$



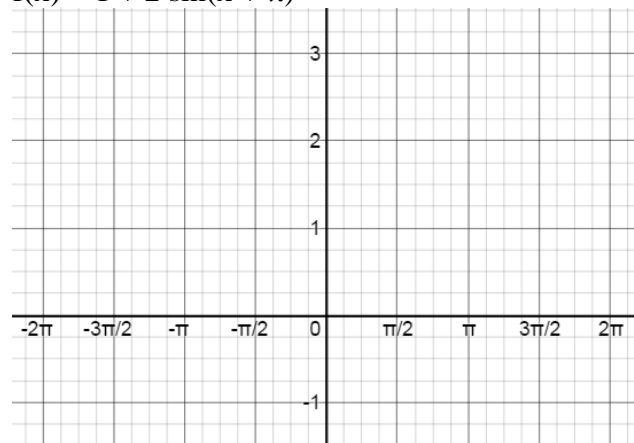
6.  $y = 4 \cos\left(x + \frac{\pi}{4}\right)$



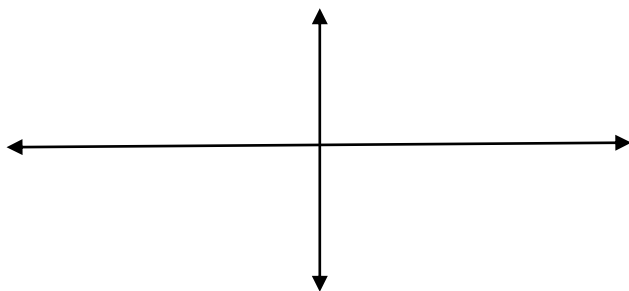
7.  $f(x) = y = -\cos(x - \pi)$



8.  $f(x) = 1 + 2 \sin(x + \pi)$



9.  $y = \frac{1}{3} \cos(x + \pi)$



10.  $y = 2 + 2 \sin 2x$

