

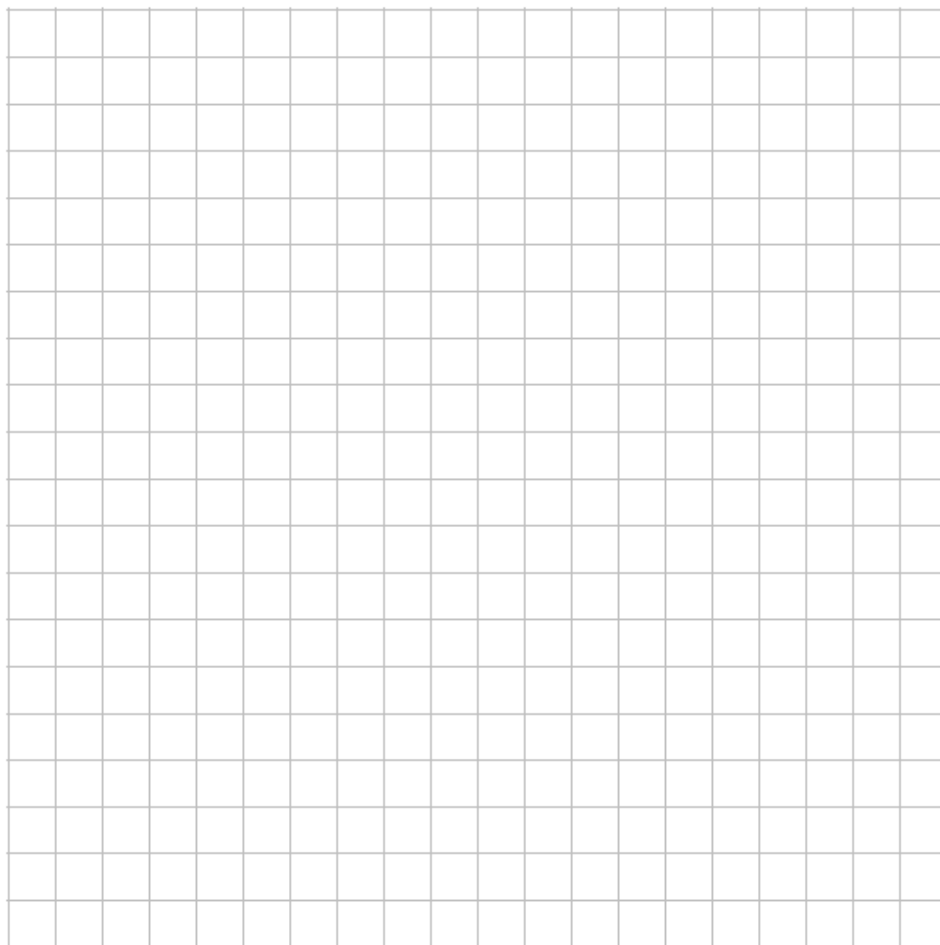
Name: \_\_\_\_\_

M\$6 Vertical Shifts of Trigonometric Graphs

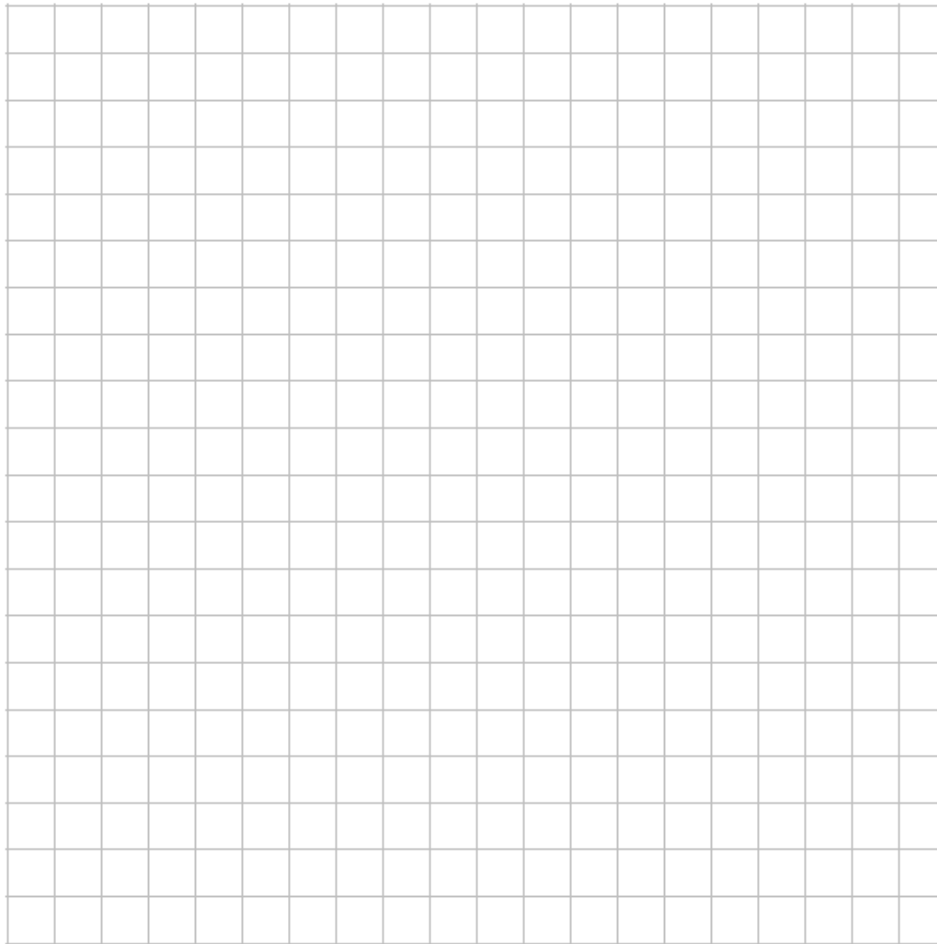
1. Complete the table:

$x$ (radians)	0	$\frac{\pi}{2}$	$\pi$	$\frac{3\pi}{2}$	$2\pi$
$y = \sin x$	0				
$y = \cos x$	1				
$y = 2 \sin x$					
$y = \sin x + 4$					
$y = \cos x - 5$					

2. Use the table to graph  $y = 2 \sin x$ ,  $y = \sin x + 4$ , and  $y = \cos x - 5$  on the same set of axes, on the interval  $-2\pi \leq x \leq 2\pi$  radians.



3. Sketch the graph of  $y = -3\cos\left(\frac{\pi}{4}x\right) + 5$  on the interval  $-8 \leq x \leq 8$  radians.



4. A student attaches one end of a rope to a wall at a fixed point 3 feet above the ground, as shown in the accompanying diagram, and moves the other end of the rope up and down, producing a wave described by the equation  $y = a \sin bx + c$ . The range of the rope's height above the ground is between 1 and 5 feet. The period of the wave is  $4\pi$ . Write the equation that represents this wave.

