



GRAPHING TRIG FUNCTIONS WORKSHEET #1

$$y = A \sin [b(x - h)] + k \quad \text{or} \quad y = A \cos [b(x - h)] + k$$

phase shift (h)

If $h > 0$, then it is a right shift. If $h < 0$, then it is a left shift.

*Notice that b must first be factored out of the parentheses before you state the phase shift!

vertical shift (k)

If $k > 0$, then it is a vertical shift up. If $k < 0$, then it is a vertical shift down.

midline - the horizontal axis that is the equilibrium point about which the graph oscillates; for the parent sine and cosine graphs, it is the x -axis ($y = 0$); vertical shifts will change the midline

1) State the phase shift for each function.

a. $y = \cos (x - \pi)$

b. $y = \sin (4x + \pi)$

2) State the vertical shifts, the max, the midline, and the min for the function $y = 3\sin (x) + 2$.

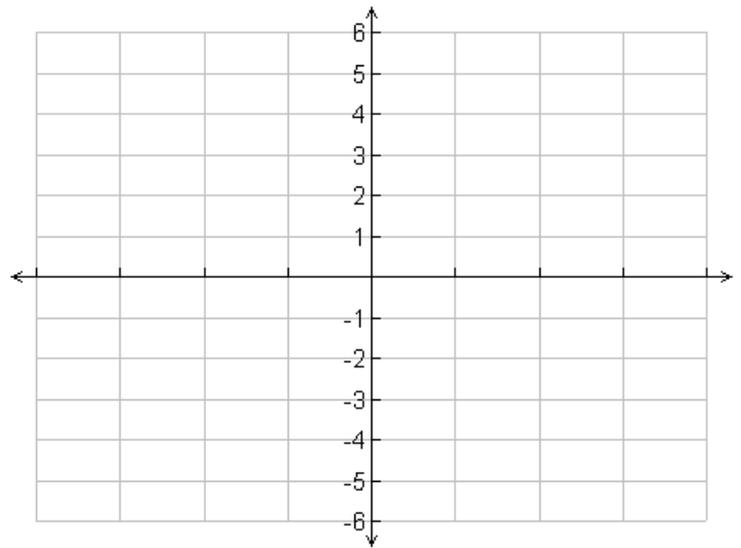
Steps for Graphing Translated Trig Functions

1. Rewrite, if necessary, your equation so that "b" is factored out.
2. Determine the vertical shift and graph the midline.
3. Determine the amplitude. Used dashed lines to indicate the maximum and minimum values of the function.
4. Mark 4 tick marks to the left and right of the origin
5. Determine the period of the function and label the 4th tick mark with this period.
6. Determine your tick mark scale by dividing the period by 4.
7. Lightly graph the appropriate sine or cosine curve w/o horizontal shift. Remember

$y = \sin x$	MID	MAX	MID	MIN	MID
$y = -\sin x$	MID	MIN	MID	MAX	MID
$y = \cos x$	MAX	MID	MIN	MID	MAX
$y = -\cos x$	MIN	MID	MAX	MID	MIN

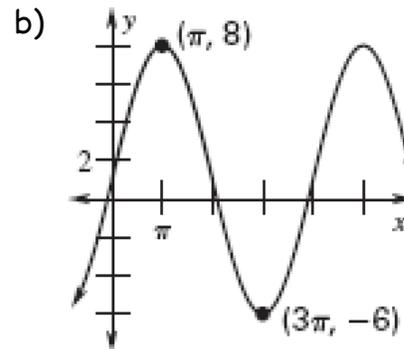
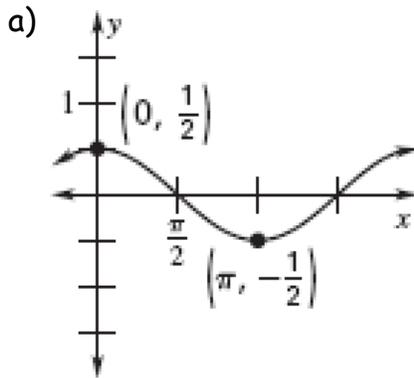
8. Determine the phase shift and translate the graph accordingly.

- 3) State the amplitude, period, phase shift, and vertical shift for $y = 2\cos(x/4 + \pi) - 1$.
Then, graph the function.



- 4) Write an equation of a cosine function with amplitude 5, period 2π , phase shift $-\pi/8$, and vertical shift -2.

- 5) Write a sine equation for the graphs below.



- 6) Graph one period of the following:

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

