

Translating the Sine Graph

This exercise goes with the Activities Center in TI-Navigator.

The student is presented with the graph of $y = \sin x$ and a set of points. The objective is to enter two equations which will pass through the given set of points. One solution should be written in the form $y = A \sin(B(x - C)) + D$ and the other in the form of $y = A \cos(B(x - C)) + D$. Although there are multiple solutions for each answer, the students are expected to use the smallest possible value for C .

The scale for the window is

$x \text{ min} = -2\pi$	$y \text{ min} = -4$
$x \text{ max} = 2\pi$	$y \text{ max} = 4$
$x \text{ scale} = \frac{\pi}{2}$	$y \text{ scale} = 1$

Each file is listed with two possible solutions as described above. Starting with H, only one solution is given. Students will have alternate solutions.

Teacher Suggestions and helpful hints:

Clear the activity data before loading the next activity.

I created the list for A – G by typing them into the List Creator within Activity Center. This process didn't take that long as there were few data points.

In contrast, H and I were created by importing list using TI Connect from a TI84+. The list was loaded within Activities Center. These lists were longer and are included in the files with activity 8727 on the Activities Exchange.

L1 and L2 are used for Activity H

L3 and L4 are used for Activity I.

L5 and L6 are used for Activity J

Activity File Name	$y = A\sin(B(x-C)) + D$	$y = A\cos(B(x-C)) + D$
Translate Sine A	$y = 2\sin(2x)$	$y = 2\cos\left(2\left(x - \frac{\pi}{4}\right)\right)$
Translate Sine B	$y = -3\sin(2x)$	$y = -3\cos\left(2\left(x - \frac{\pi}{4}\right)\right)$
Translate Sine C	$y = 1.5\sin(x) + 1$	$y = 1.5\cos\left(x - \frac{\pi}{2}\right) + 1$
Translate Sine D	$y = -\sin(3x) - 2$	$y = -\cos\left(3\left(x - \frac{\pi}{6}\right)\right) - 2$
Translate Sine E	$y = 2.5\sin(0.5x) + 1$	$y = 2.5\cos(0.5(x - \pi)) + 1$
Translate Sine F	$y = 3\sin\left(x - \frac{\pi}{2}\right)$	$y = -3\cos x$
Translate Sine G	$y = \sin(3x)$	$y = \cos\left(3\left(x - \frac{\pi}{6}\right)\right)$
Translate Sine H	$y = 1.5\sin(1.75x) + 2$	
Translate Sine I	$y = 0.7\sin(0.5x) + 1$	
Translate Sine J	$y = -0.9\sin(1.5x) + 2.5$	