Grade level: 9-12
Subject: Algebra2/Precalculus
Time required: 60 minutes

Periodic Transformations

by – Bill Stiggers and Sheryl Edwards

Activity overview

This is an activity intended to help students review and understand transformations of the sine and cosine functions. They will work with amplitude, frequency, phase shift and vertical shift to match a function to a scatter plot.

Concepts

*Given a function in the form: f(x)=a*sin(b(x-h))+k, students will understand the effect of a,b,h,and k on the graph of a function compared to a parent functions: f(x)=sin(x) and f(x)= cos(x). They will recognize sine and cosine parent functions on sight.*

Teacher preparation

Transfer the file periodictransformations.tns to student calculators.

Classroom management tips

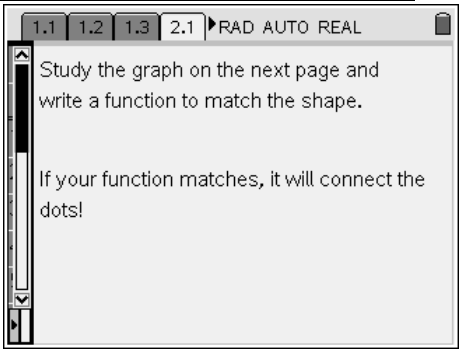
At the beginning of class, review a few navigating steps such as how to go from page to page and from split screen to split screen. Several of the pages (2.1, 3.1, and 4.3) are actually split screens with the spreadsheet part hidden behind the notes page. It is not intended for students to see the spreadsheet. Students may need to be directed to press ctrl and tab to actually be on the notes page.

TI-Nspire Applications

This activity uses spreadsheets and lists, graphing and notes pages, including the Q& A format.

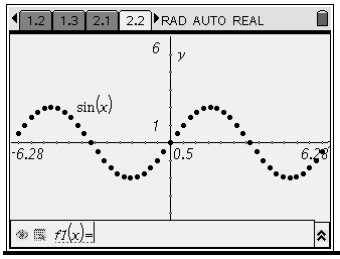
Step-by-step directions

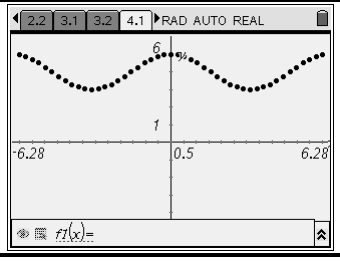
After transferring the activity to calculators, have the students open the file periodictransformations.tns. Depending on the students experience with TI Nspire, you may want to preview the activity to give them tips on getting around within the document. One way to type a function is on the function line. The other is by using a text box to type in the expression and then dragging it to either axis. The activity is set up to have students type their answers on the TI Nspire, or you may have them answer with pencil and paper.

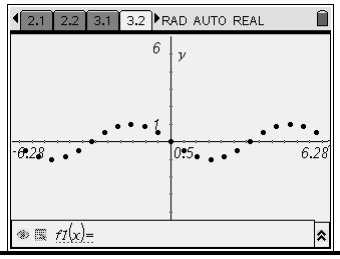


Assessment and evaluation

Give students a set time to finish the activity and then require them to hold a discussion and compare the functions they used to match the graph to each other.







Student TI-Nspire Document
periodictransformations.tns

Please open the file *periodictransformations.tns. Then read and do the activity on your TI NSpire. The activity is intended to be paperless, so you will type your answers directly into your TI Nspire. Here are some pictures of the first few screens, just to make sure you have the correct file open.*