

Exploring through technology:

Directions: Look through Part A. If you are familiar with these parameters and do not feel you will benefit from this exploration, then complete only Part B for homework. Otherwise, complete only part A for homework.

A. Exploring the sine function

The following online applet will let you explore the shape of different trigonometric functions. The program is equipped with sliders that allow you to change the parameters a , b , c and d in the sine function $f(x) = a * \sin(bx + c) + d$. If you can not access the applet online, you can investigate the same questions using your graphing calculator.

Applet: <http://www.analyzemath.com/trigonometry/sine.htm> and click on the interactive tutorial

Directions:

Given the parameters a , b , c and d in the sine function $f(x) = a * \sin(bx + c) + d$, investigate the following situations. In your responses, (1) give specific examples of sine functions you examined (what values of a , b , c and d did you use), and (2) offer hypotheses of why you think your finding is true. WRITE YOUR ANSWERS ON A SEPARATE PAGE.

Hold the other 3 parameters constant for investigations 1 – 4.

- 1) What is the impact of parameter a on the sine function?
(e.g., when it's large, when it's small, when it's negative, when it's less than 1 but more than 0, ...)
- 2) What is the impact of parameter b on the sine function?
(e.g., when it's large, when it's small, when it's negative, when it's less than 1 but more than 0, ...)
- 3) What is the impact of parameter c on the sine function?
- 4) What is the impact of parameter d on the sine function?
- 5) Reinvestigate 1 – 3 above if you do not hold the other 3 parameters constant.

B. Exploring the unit circle

The following applet will allow you to explore the relationship between the angles of a circle and trigonometric functions.

Applet: <http://www.analyzemath.com/unitcircle/unitcircle.html> ;click on the interactive tutorial.

Directions: Use the applet and any other resources you find, to explain the following:

What is the relationship between “Right Triangle Trig” and periodic functions?

Explain in as much detail as you feel comfortable, and that would make sense to a student in your discipline.