Algebra 2
Unit: Trigonometric Functions
Section: Graphing Trigonometric Functions

Tutorial: Graphing the Sine Function

Slide 1

Finding the values of the sine function.
Let's fill in the values of the following table so that we can get an idea of what the sine function will look like graphically.
Sine of zero degrees is equal to zero.
Sine of forty-five degrees is equal to zero point seven zero seven.
Sine of ninety degrees is equal to one.
Sine of one hundred thirty-five degrees is equal to zero point seven zero seven.
Sine of one hundred eighty degrees is zero.
Sine of two hundred twenty-five degrees is equal to negative zero point seven zero seven.
Sine of two hundred seventy degrees is equal to negative one.
Sine of three hundred fifteen degrees is negative zero point seven zero seven.
Sine of three hundred sixty degrees is equal to zero.

Slide 2

Graph of one period of the sine function.
After plotting the points and graphing the line, the sine function looks like this: it starts at the origin, curves up to the right to its highest point (90 degrees, 1), then back down through the point (180 degrees, 0) and down to its lowest point (270 degrees, negative 1). It finishes by curving back up to the point (360 degrees, 0).
The graph shows one period of the sine function from 0 to two pi radians or three hundred sixty degrees. This is one period because the graph starts and then goes back to the same point.

Slide 3

Graph of the sine function.
If the curve is repeated both to the right and to the left, this is the graph of the entire sine function. It goes on forever in both directions.

Slide 4

Graph of Cosine Function
Here is your turn to try this process on the cosine function. Fill in the same table as before, using the cosine function and then graph the cosine function.

Solution:
The cosine curve starts at the point (0, 1), curves down to the right, through the point (90 degrees, 0) and down to its lowest point (180 degrees negative 1). It then curves back up through the point (270 degrees, 0) and up to its highest point (360 degrees, 1). This curve is repeated both to the left and to the right, continuing forever.

Slide 5

Graph of Tangent Function
Here is your turn to try this process on the tangent function. Fill in the same table and then graph the tangent function.

This curve goes through the origin and curves upward as it approaches 90 degrees. It never crosses that value. It then starts on the right side of 90 degrees, in the negative direction, going through the point (180 degrees, 0) and continuing up again.
Hint. There are some undefined values of the tangent function. How are those represented on a graph?

Slide 6

Overview
Take some time to become familiar with the general shape of these functions. Practice graphing these functions until you do not need to use a table.