Unit Circle and Trig Function GSP Tour

-Open the UnitCircleTrig file posted on the website and explore it to fill in the following blanks. On a clean sheet of notebook paper, you must write this out (no print outs) and underline, highlight or use a different color for the words that go in the blanks. Not doing so will result in no credit.

When I open the gsp file I notice a circle centered on a graph. The x-axis has units of _________ and goes from about ________ to about _________. This is for plotting the trig functions _______, ________ and ________ because there are ________ degrees in a complete circle. The y-axis goes from about _______ to about ______ because it represents the radius of the unit circle which by default is ________ unit(s).

The unit circle (and any circle) can be graphed by using either a regular function based on the _______________, such that the radius is equivalent to the ________ of the two sides squared. In the case of the unit circle the function would be y = ______________. To graph a circle with radius 'r', the function would change to y = ______________. A circle itself is not a true function because it does not pass the _____________ test or in other words there are multiple _____ values for each ______ value. In this case however we are taking the _________ root of ($r^2 + x^2$) to solve for _______ when we have y^2. We know that anytime we take the square root of a number we wind up with ______ results, one is ______ and one is _________ because the square of a positive number as well as the negative of that number with both give us the same number (i.e. $(3)^2 = 9$ and $(-3)^2 = 9$). This means that the function for a circle is essentially two functions, one that has _____ values that are positive and one that has 'y' values that are __________. The _________ form of the circle equation is: $y^2 + x^2 = r^2$. Adding to the ________ values would move the circle up while subtracting from the _______ values would move it down. Adding to the ______ values would move the circle to the right while subtracting from them would move it left.

The trig functions can also be used to graph a circle by splitting the 'x' and 'y' values into ____________ equations (vector eq's). The trig functions explain the lengths of the __________ of the triangles formed by the central angle of the circle: (the variable used for that angle is commonly ________). To find the leg that is the 'x' length we use the ________ function and to find the leg that is the 'y' length we use the _________ function.

The conversion factor to change from degrees to radians is: 1 radian = _________ and to convert from radians to degrees (solve for degrees algebraically): 1 degree = __________. As we move around the circle we are at ________ radians when we are at 180 degrees. When we are at ________ radians we are at 53 degrees. When we are at 3.5π radians we are at ________ degrees and when we are at $0.3\ \pi$ radians we are at ________ degrees.

(*click show sin then drag point 'x' or click the 'Move around the circle'* button)

Observing what happens with the triangle and the graph of sin of the angle theta, I notice that the values on the x-axis represent _________ and on the y-axis represent the ________ which is the _________ of the circle at 90 and 270 degrees. The sin function is plotted as we move along the x axis. If we start at 0 degrees the y value, which is the same as the _________ side of the triangle formed by angle theta, is equal to _________ .