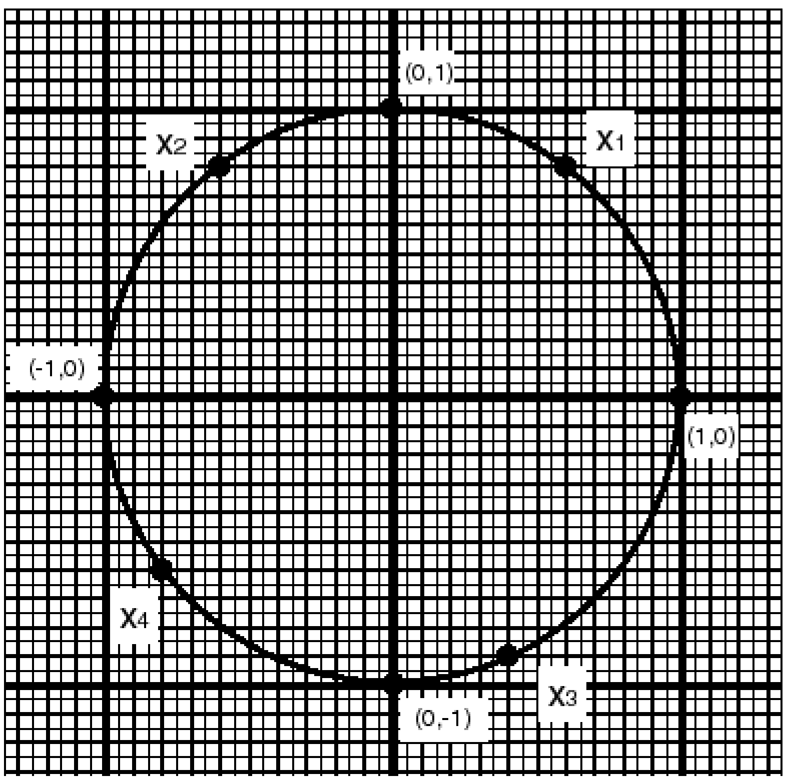
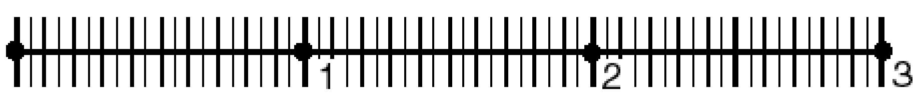
Trigonometry NAME:
Circular Functions: Sine, Cosine, and Tangent

1. Consider the points x_1, x_2, x_3, and x_4. For each x_i, measure the length of the arc from (1,0) to the point. The units are O'Leary-Johnsons. Use your twist-tie and the ruler below the graph to do this.

Notice x_3 and x_4 are too far from (1,0) to measure this way. So measure them from (1,0) in a clockwise direction and label these x values as negative. Record the arc lengths in the table below. Then continue with the rest of the ditto.





x_i	x_1	x_2	x_3	x_4
Arc length as measured from (1,0)				

2. Make sure your calculator is in radian mode. Use your calculator and the arc lengths from above to find the sine, cosine and tangent of these measurements. Use the table to record your calculations.

3. Notice we are investigating the circular functions sine, cosine and tangent. Compare the values gotten above with the definitions of the sine, cosine and tangent of these lengths using the point's coordinates as discussed in class. Then compare the values gotten the two separate ways.

Arc length x_i		**Use your calculator to find the trigonometric values**	**Use the definitions of the circular functions and the point's coordinates**
x_1 =	$\sin x_1$		
	$\cos x_1$		
	$\tan x_1$		
x_2 =	$\sin x_2$		
	$\cos x_2$		
	$\tan x_2$		
x_3 =	$\sin x_3$		
	$\cos x_3$		
	$\tan x_3$		
x_4 =	$\sin x_4$		
	$\cos x_4$		
	$\tan x_4$		