Radian Measure and Trigonometric Functions
Sidewalk Chalk Project

1. Form groups of at least two but at most three students from our class. One person needs to have the ability to take digital photos (phone, camera) and one person needs to be able to write up a summary of the group's results.

2. An item will be given to your group that will be considered to be "one unit" long. Only using this item and the sidewalk chalk provided:

- Construct a circle of radius 1.
- Illustrate that the radian measure of one complete revolution around your circle is 2π. Please note that 2π is slightly larger than 6 so you better do things accurately enough so that this turns out right. Don't cheat yourself on this step since it is a way to be certain you are doing things correctly.
- Determine experimentally a good approximation to the radian measure for 3 complete revolutions. No calculators...we all can determine its exact value that way.
- Determine experimentally a good approximation to the radian measure for 10 complete revolutions. A helpful hint: 60 radians (whatever that is) can be done by first doing 6 radians and measuring the small amount left over till one revolution. Repeating this small amount properly 10 times gives 60 radians. This can be useful.

3. Create a reasonable grid over your circle by considering ½ radius distance, ¼ and ¾ radius distances, etc. With this grid to give you (x,y) points:

- Determine a good approximation to sin(1) and cos(1) without using a calculator.
- Determine a good approximation to sin(4) without using a calculator.
- Determine a good approximation to cos(11) without using a calculator.

4. The person taking pictures should take shots of each drawing (include steps) and post them on the facebook group Side-walk Trigonometry. The person writing up the summary should do so in Google Docs and share with each member of the group and the instructor

Deadline to complete project: Next Tuesday.