1. In a circle of radius 40 inches a central angle of $27^\circ$ determines an arc of length $s$ inches. Find the value of $s$.

2. Find the radian measure good to four decimal places of the angle $235^\circ38'$.

3. The Tour de France is a bicycle race held in France. The average speed of one race was 20mph. The diameter of a wheel is 26 inches. What is the average angular speed in radians/minute?
4. This problem refers to the definition of the trig functions.

(a) Given any angle $t$, measured in degrees or radians, write down the steps which are used to determine $\cos t$ and $\sin t$ using the definition.

(1)

(2)

(3)

(b) Use the definition you gave in part a) in the case $t = 90^\circ$ to determine $\cos 90^\circ$ and $\sin 90^\circ$.

(c) Give the definitions of the other four trig functions in terms of the sine and cosine functions.
5. Suppose that \( \theta \) is an acute angle and you know that \( \tan \theta = 5 \). Use the method of right triangles to determine the five other trig functions of \( \theta \). This means that you will have to draw a right triangle, give the lengths of its sides etc.

6. A wire of length 50 feet is attached to a wall at a point \( C \) and reaches out to a point \( O \) on the ground in front of the wall. Let \( B \) be the point on the ground at the bottom of the wall. If the angle \( BOC \) is \( 30^\circ \) find how high \( C \) is above the ground.
7. Use your calculator to find the following

(a) \( \cos 113^\circ = \)

(b) \( \cos 113 = \)

(c) an acute angle whose sine is .2578

(d) an acute angle whose tangent is 85.32

8. Find the amplitude, period, phase shift and sketch the graph of the equation \( y = 4 \sin 3x \). Be sure and include two cycles and give the exact coordinates of those points where the graph crosses the \( x \)-axis.