Math 1151, Lecture 010, Evaluative Exercise 1
January 28, 2010

Name: _____

Discussion Section: _____

Discussion TA: _____

You have twenty-five minutes to complete the following six problems, without using your notes, your book, or a calculator. For word problems you may use the approximation $\pi \approx 3$.

1. Draw the unit circle with the five important angles in the first quadrant. Label the angles (in radians) and the coordinates (x, y) of the corresponding points.

2. Convert the angles

   (a) from radians to degrees:

   $\frac{5\pi}{4} =$ $\frac{5\pi}{6} =$ $-\frac{\pi}{3} =$

   (b) from degrees to radians:

   $135^\circ =$ $-120^\circ =$ $180^\circ =$

3. Arlena ran on a circular track with a half-mile radius, sweeping out an angle of 60° in 4 minutes.

   (a) How far did she run?

   (b) What was her angular speed in rpm (revolutions per minute)?

   (c) What was her linear speed in mph (miles per hour)?

4. Find the values of the six trigonometric functions at the angle θ, where

   (a) θ is in standard position and the point $P = (-1, 3)$ is on its terminal side

   (b) $\cos\theta = 1/4$ and θ lies in quadrant IV

5. Fill in the properties of sine and cosine:

	sine	cosine
Domain		
Range		
Even or Odd		
Period		

6. (**Challenge**) Write secant in terms of sine and cosine. (This is one of the "fundamental identities.") Use this expression to *derive* the properties of secant (domain, range, even/odd, period.)