Math 1151, Lec 010
Study Guide for Exam 1

You need to be able to:

1. Convert degrees to radians and vice versa.
2. Compute the measure of angles that are integer multiples of the standard angles.
3. Compute arc length, area of sector, angular and linear speed.
4. Evaluate trig functions at angles that are integer multiples of the standard angles.
5. Evaluate trig functions at angles determined by various information:
   (a) given a point P on a circle of radius r.
   (b) given the value of one trig function and some other info (e.g. quadrant, sign, ...).
6. Graph sinusoidal function from equation.
7. Give equation for sinusoidal function from graph.
8. Graph transformations of tangent, secant, cotangent, cosecant.

Here's a list of formulas and basic facts you should have at the tip of your fingers for the exam. Write them out in the space provided.

1. Draw the unit circle and label the five standard angles, in degrees and radians

2. The length of an arc on a circle of radius r subtended by the angle θ (in radians) is

   $s =$

   The area of a sector in a circle of radius r, with central angle θ (in radians) is

   $A =$

   The linear speed of an object travelling along circle of radius r, with constant angular speed ω (in radians per unit time) is

   $v =$

3. Write sine and cosine in terms of the coordinates (x, y) of the point on the unit circle corresponding to the angle θ:

   $\sin\theta =$

   $\cos\theta =$

4. Write $\tan\theta$, $\cot\theta$, $\sec\theta$, and $\csc\theta$ in terms of $\sin\theta$ and $\cos\theta$.

   $\tan\theta \ =$

   $\cot\theta \ =$

   $\sec\theta \ =$

   $\csc\theta \ =$

5. Evaluate the trig functions at the standard angles:

θ	$\sin\theta$	$\cos\theta$	$\tan\theta$	$\cot\theta$	$\sec\theta$	$\csc\theta$
0						
$\frac{\pi}{6}$						
$\frac{\pi}{4}$						
$\frac{\pi}{3}$						
$\frac{\pi}{2}$						

6. State the properties of all the trig functions:

	$\sin\theta$	$\cos\theta$	$\tan\theta$	$\cot\theta$	$\sec\theta$	$\csc\theta$
Domain						
Range						
Sign						
Period						
Even/Odd						

7. State the three Pythagorean identities.

8. Basic graphs

   (a) Graph $y = \sin x$ and $y = \cos x$. Graph two full periods and label four key points on each graph.

(b) Graph $y = \tan x$ and $y = \cot x$. Graph two full periods, label 3 key points, and label the asymptotes on each graph.

(c) Graph $y = \sec x$ and $y = \csc x$. Graph two full periods, label 3 key points, and label the asymptotes on each graph.

9. For $y = A\sin(\omega x - \phi)$ and $y = A\cos(\omega x - \phi)$,

amplitude =

period $= T =$

phase shift =