Math 155 (Section 1) Quiz 2 (Section 3.6- Section 3.7)
Due before class on Friday, September 30, 2002

Name(Print)_____ Student ID_____ Grade_____

1. Complete if necessary and memorize ALL the following formulas:

π rad = deg	1 rad = deg	1 deg = rad
$\cos(x+y) = \cos x \cos y - \sin x \sin y$		$\tan x = \frac{\sin x}{\cos x}$
$\sin(x+y) = \sin x \cos y + \cos x \sin y$		$\cot x = \frac{\cos x}{\sin x}$
$\sec x = \frac{1}{\cos x}$	$\csc x = \frac{1}{\sin x}$	$\sin 2\theta = 2\sin\theta\cos\theta$
$\cos 2\theta = \cos^2\theta - \sin^2\theta = 1 - 2\sin^2\theta = 2\cos^2\theta - 1$		$\sin^2\theta + \cos^2\theta = 1$
$\tan^2\theta + 1 = \sec^2\theta$	$\cos^2\theta = \frac{1+\cos 2\theta}{2}$	$\sin^2\theta = \frac{1-\cos 2\theta}{2}$
$\lim_{\theta\to 0}\frac{\sin\theta}{\theta} =$	$\lim_{\theta\to 0}\frac{1-\cos\theta}{\theta} =$	$(\sin x)' =$
$(\cos x)' =$	$\tan x = \frac{\sin x}{\cos x}$	$\cot x = \frac{\cos x}{\sin x}$
$\sec x = \frac{1}{\cos x}$	$\csc x = \frac{1}{\sin x}$	$(\cot x)' =$
$(\tan x)' =$	$(\sec x)' =$	$(\csc x)' =$

2. Find the derivatives of the following functions.

   (a) $f(\theta) = 3\cos^2(5\theta)$

   (b) $g(x) = sec(x^4 + 3)$

   (c) $g(x) = (\sin(x^2) + x)^5$

3. Find $\frac{dy}{du}$ using the chain rule where $y = \cos(3x)$, $x = u^5 + u^2 + 2$.

4. Find the dimensions of the rectangle of greatest area which can be inscribed in a circle of radius r. (Hint: method 1 using trig function; method 2 using Pythagorean theorm).