V1

1	2	3	4	5	6

Last Name:_____

First Name:_____

ID:_____ Section:____

Math 1271 Midterm #2. March 14, 2003

Attention! Please, note that this is the closed book test. You are not allowed to use graphing calculator. Simple calculators are allowed. Please, show all important steps in you solution but do not make your solution excessively long.

1. Evaluate $f'(x)$, make sure to simplify the final answer

$$f(x) = \tan x - \cot x.$$

2. Evaluate $g'(x)$, $h'(x)$, and $f'(x)$.

$$g(x) = \sqrt{1 - x^2},$$

$$h(x) = \sqrt{1 - \sqrt{1 - x^2}},$$

$$f(x) = \sqrt{1 - \sqrt{1 - \sqrt{1 - x^2}}},$$

3. Find an equation of the tangent line to the curve

$$y = \frac{\mathrm{e}^x}{x^2},$$

at the point $(1, \mathrm{e})$.

4. Use implicit differentiation to find $y''(x)$

$$\sqrt{x} + \sqrt{y} = 1.$$

5. Evaluate $y'(x)$ by Logarithmic Diferentiation

$$y(x) = \sqrt{x-1}(\arctan x)^{10}\mathrm{e}^{x^3}.$$

6. Find the differential of the function

$$f(x) = x^3 \cos^2 x, \qquad \text{at} \quad x = \pi.$$