MATH 140A MIDTERM EXAMINATION II March 27, 2003

Name_____ ID #_____ Section #_____

There are 10 multiple choice questions, 5 True/False questions, and 4 partial credit questions.

THE USE OF CALCULATORS IS NOT PERMITTED IN THIS EXAMINATION.

THERE ARE 15 PROBLEMS ON 11 PAGES, INCLUDING THIS ONE.
CHECK YOUR BOOKLET NOW.

The box below is for the instructor's use.

MC .....(50)

T/F .....(10)

12 .....(6)

13 .....(10)

14 .....(12)

15.....(12)

Total ..... (_____)

1. (5 pts.) The slope of the normal line, at the point $(-1, 1)$, of the graph given by $x^2 + y^2 = 2$ is

   a) -1

   b) 0

   c) 1

   d) 2

   e) The normal line does not exist at the point.

2. (5 pts.) Suppose $x = \sin y$, find $\dfrac{dy}{dx}$.

   a) 0

   b) $\dfrac{1}{x}$

   c) $\dfrac{1}{\sqrt{1-x^2}}$

   d) $\dfrac{1}{1+x^2}$

   e) $x^2 - 1$

3. (5 pts.) Suppose $f(x) = x + \dfrac{1}{x}$. Find all critical points of $f(x)$.

a) $x = 0$

b) $x = 1$

c) $x = 0, 1$

d) $x = 0, 1, -1$

e) $x = 1, -1$

4. (5 pts.) Suppose $f'(x) = x(x-2)^2(x-4)$. How many local maximum does $f(x)$ have?

a) 0

b) 1

c) 2

d) 3

e) 4