V1

1	2	3	4	5	6

Last Name:_____

First Name:_____

ID:_____ Section:____

Math 1051 Midterm #2. October 25, 2002

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. Find the center and the radius of the circle:

$$x^2 + y^2 - 4x + 6y = 3.$$

2. Find the function which is finally graphed after the following transformations are applied to the graph of $f(x) = \frac{1}{x^3} + x$. Write the intermediate result on each step.

a) Shift up 3 units;

b) stretch horizontally 3 times;

c) shift right 1 units.

d) reflect about Y-axis;

3. Find equation of the line perpendicular to the line

$$2y + x = 1$$

and containing point $(1, 2)$.

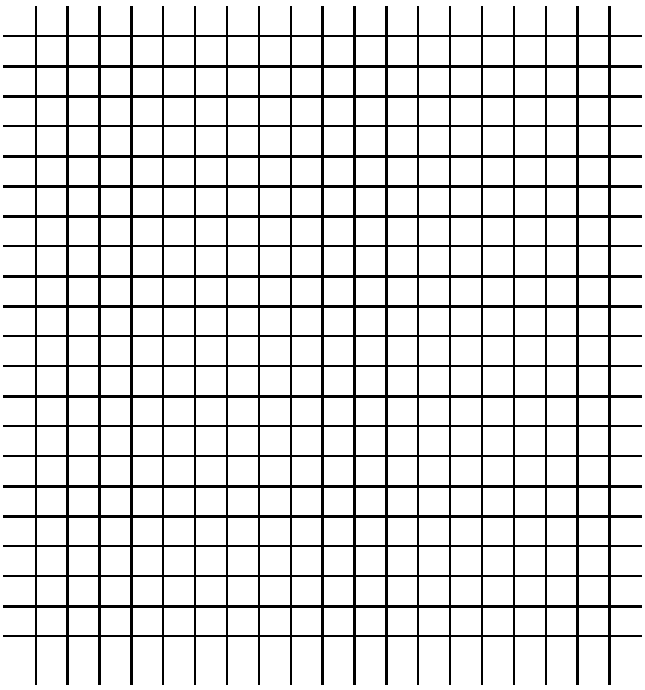
4. Find the composite function $f \circ g$ and specify it's domain;

$$f(x) = \sqrt{1 - x^2}, \quad g(x) = \sqrt{x - 4}.$$

5. Find the average rate of change of the function

$$f(x) = x^2 + \frac{4}{x^2}$$

from 1 to 2.

6. Graph the piece-wise function

$$f(x) = \begin{cases} -x^2, & -1 \leq x \leq 0 \\ -x+1, & 0 < x \leq 1 \\ x^3, & x > 1. \end{cases}$$