# V2

| 1 | 2 | 3 | 4 | 5 | 6 |
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Last Name:________________

First Name:________________

ID:________________ Section:____

Math 1051 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. Find the center and the radius of the circle

$$x^2 + y^2 + 2x - 6y = 15.$$

2. Find the function which is finally graphed after the following transformations are applied to the graph of

$$f(x) = \sqrt{x} + \frac{1}{x}.$$

Write intermediate result on each step.

a) down 3 units;

b) reflect about Y axis;

c) stretch horizontally by a factor of 2;

d) left 2 units.

3. a) Find the midpoint $M$ of the segment connecting points $P_1(3,7)$ and $P_2(1,1)$.
b) Write an equation of the line containing $M$ and perpendicular to the line

$$y = 3x + 5.$$

4. a) Specify the domain of the function $f(x)$. b) Find Average Rate of Change from x=0 to x=1.

$$f(x) = \sqrt{4-x} - \sqrt{x+4}$$

5. Find the composite function $(f \circ g)(x)$:

$$f(x) = x^2 + \sqrt{x-2}, \qquad g(x) = \frac{1}{x-1}.$$

6. Graph the piece-wise function

$$f(x) = \begin{cases} -(x+2)^2, & x < -2; \\ 1, & -2 \le x \le -1; \\ -2x, & x > -1 \end{cases}$$