V2

1	2	3	4	5	6

Last Name:________________

First Name:________________

ID:________________ Section:____

Math 1051 Midterm #2. October 22, 2001

Attention! Please, note that this is the closed book test. You are not allowed to use graphing calculator. Simple calculator is 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. Graph the circle.

$$x^2 + y^2 - 2x + 4y - 4 = 0.$$

2. The four points P_1, P_2, P_3, P_4 are given. a) Find the midpoint of the segment connecting the midpoints of the segments P_1P_2 and P_3P_4. b) Find the midpoint of the segment connecting the midpoints of the segments P_1P_3 and P_2P_4 (this time the segments are different). c) Explain why the parts a) and b) have the same answer.

$$P_1 = (2, 3), \quad P_2 = (4, 1), \quad P_3 = (-2, -3), \quad P_4 = (0, 5).$$

3. Find the line perpendicular to

$$y = -2x + 5,$$

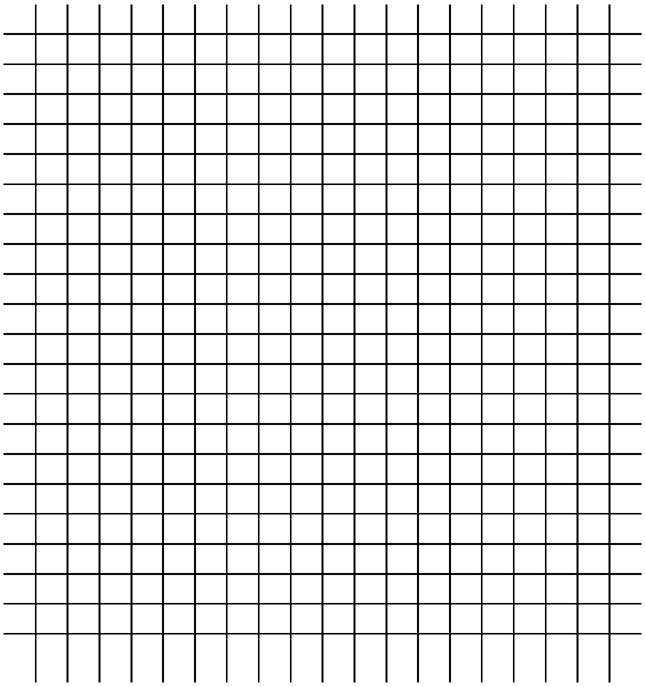
containing point $(2, 1)$.

4. Graph the function on the interval $0 \leq x \leq 2$,

$$f(x) = \frac{1}{8}(x+1)^3 - \sqrt{x}.$$

5. a) Plot the piecewise determined function. b) Find points of local maxima and minima. c) Determine the intervals of increment and decrement.

$$f(x) = \begin{cases} 3x+2, & -1 \le x \le 0 \\ \sqrt{x}, & 0 < x < 4 \\ 6-x, & x \ge 4 \end{cases}$$



6. a) Determine the domain of the function $f(x)$. b) Find the Average Rate of Change of $f(x)$ from $x = 2$ to $x = 5$.

$$f(x) = \frac{2}{\sqrt{x-1} - 3}.$$