V1

1	2	3	4	5	6

Last Name:________________

First Name:________________

ID:________________ Section:____

Math 1051 Midterm #3. November 22, 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.

1a. What is the coefficient standing with x^3 in the polynomial

$$P(x) = (2x^3 - 7)(x^2 - 5x).$$

- ☐ 2;
- ☐ 0;
- ☐ -7;
- ☐ -5;
- ☐ -10.

1b. Two functions are inverse to each other. These two functions are

- ☐ $f(x) = x^2$ and $g(x) = \sqrt{x}$;
- ☐ $f(x) = x^3$ and $g(x) = \sqrt[3]{x}$;
- ☐ $f(x) = x^2$ and $g(x) = \frac{1}{x^2}$;
- ☐ $f(x) = 2x + 1$ and $g(x) = \frac{1}{2x+1}$;
- ☐ $f(x) = 5x + 1$ and $g(x) = \frac{x}{5} - 1$.

1c. The vertex of the quadratic function

$$f(x) = 3x^2 - 6x - 7$$

☐ is $(-1, -2)$;

☐ is $(0, -17)$;

☐ is $(1, -10)$;

☐ is $(2, 5)$;

☐ is $(3, 2)$.

1d. Which from the following identities is true.

☐ $a^x - b^x = (a - b)^x$;

☐ $a^s - a^t = a^{s-t}$;

☐ $a^x a^x = a^{x^2}$

☐ $(a^x)^2 = a^{x^2}$;

☐ $(a^s)^t = (a^t)^s$.

2. Solve rational inequality

$$\frac{x^2+3x+2}{x^2-3x-4} > 1.$$

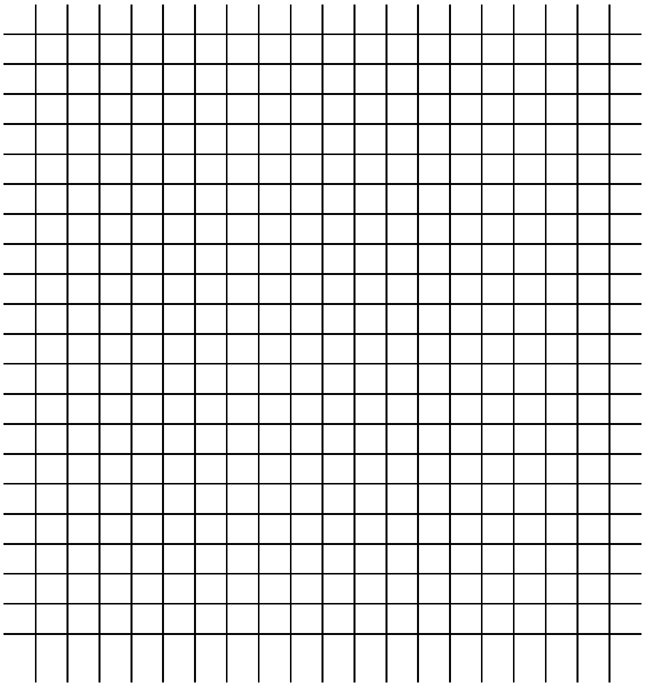
3. Find the inverse function to
$$f(x) = \frac{x-3}{x+2}.$$

4. Graph the rational function

$$R(x) = \frac{(x^3+27)(x^2-2x-3)}{(x^2-9)(x^2-3x+2)}.$$

5. Graph using transformations

$$f(x) = 1 - e^{2x}.$$



6. Solve exponential equation

$$\frac{4^x}{2^{x^2}} = 1.$$