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Spring 2004

MA07: Algebra-I
Final Exam

Instructor:

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Please print the requested information in the spaces provided

Student:

Name:

Student Id:

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(optional)

- *No calculators are allowed on this exam.*
- *Please show all your work. (You may use back pages or attach additional paper if necessary.) You will not receive full credit for a correct answer if there is no work shown.*

Problem 1. Two points on the plane are $(-2, 5)$ and $(3, -1)$.

(1). Find the slope of the line that joins the above two points.

Space for your solution:

(2). Find the slope-intercept equation of the line that joins the above two points.

Space for your solution:

Problem 2. Divide the polynomial $x^4 - 7x^2 + x$ by the polynomial $x^2 - 2x + 1$.

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Problem 3. Using the result of the preceding problem, write $\frac{x^4 - 7x^2 + x}{x^2 - 2x + 1}$ as a sum of a polynomial and a “proper fraction”, i.e. a fraction of the form $\frac{f(x)}{g(x)}$, where $f(x)$ and $g(x)$ are polynomials and the degree of $f(x)$ is strictly less than the degree of $g(x)$.

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Problem 4. Solve the system of linear equations:

$$\begin{cases} 2x + y = 5 \\ x + y = 2 \end{cases} .$$

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Problem 5. Factor completely the polynomial $x^2y^3 - 6xy^2 + 9y$.

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Problem 6. Solve the equation:

$$\frac{2}{x-3} + \frac{4}{x+3} = \frac{4x}{x^2-9}.$$

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Problem 7. Using properties of exponents, write the following fraction as product of exponents:

$$\frac{x^5y^3}{y^2x^{10}\sqrt{2z}}.$$

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Problem 8. Solve the equation

$$x^2 - 4x - 21 = 0$$

by factoring the polynomial $x^2 - 4x - 21$.

Space for your solution: