

Overview of Section 1.1, 1.2

1. **Vocabulary:**

- (a) Linear equation.
- (b) An $(m \times n)$ system of linear equations.
- (c) An $(m \times n)$ Matrix.
- (d) Free variable.
- (e) Pivot position.
- (f) Echelon and Reduced Echelon form.

2. **Key Concepts:**

- (a) Matrix representation of system of linear equations.
- (b) Each matrix is row equivalent to one and only one reduced echelon matrix.
- (c) An $(m \times n)$ system of linear equations has either (i) no solution, (ii) infinitely many solutions, or (iii) a unique solution.

3. **Skills to Master:**

- (a) Constructing the augmented matrix of a system.
- (b) Reduction of the matrix to reduced echelon forms.
- (c) Description of the solution set to a system of linear equations.
- (d) Existence and Uniqueness: Using Theorem 2.

Homework Set no.	Date	Section	Problems
Homework Set 1	Jan. 4th, 2000	1.1	1,5,7,11,15
Homework Set 2	Jan. 5th, 2000	1.1	23,27,31,33,34,35
		1.2	1,3,5,9,17
Homework Set 3	Jan. 9th, 2000	1.2	19,23,24,32
		1.3	1,5,7,9,11,12,13,17,20,25,27,31
Homework Set 4	Jan. 11th, 2000	1.4	1,5,7,9,11,15

¹ **Office hours:** Monday 2-3pm, 5-6pm, Thursday at 1:30-2:30pm, or by appointment.

Math 221 202

(Take home) Quiz 1

Score

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Your name _____ Student #

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Due: Tuesday, January 9th at 10.00am

Ground Rules:

1. *Open book and notes. You may consult anyone you want, but you must write up your own solutions.*
2. *Show your work. Explain your solutions clearly.*
3. *When you submit the quiz back on Tuesday, please use this sheet as the first page.*
4. *The grader will choose two out of these 8 problems and grade them.*
5. *Maximum possible score will be 25. There will be 4 points for completion and 1 point for attaching this sheet.*

Syllabus: 1.1,1.2

Solve the following Questions:

1. Section 1.1 : 16,23,34.
2. Section 1.2 : 5,24,33.
3. Consider the system of equations

$$x_1 + x_2 + x_4 = 3 \quad (1)$$

$$x_2 + 2x_3 = -1 \quad (2)$$

$$x_1 - x_2 - 4x_3 + 2x_4 = 6 \quad (3)$$

- (a) Write down the augmented matrix of this system of equations.
- (b) Use elementary row operations to find a matrix in echelon form which is row equivalent to the matrix you found in (a).
- (c) What is the solution set of the system of equations ?
- (d) Find all solutions for which $x_1 = 0$.