Overview of Section 1.3, 1.4

1. **Vocabulary List:**

   (a) Vectors in $\mathbb{R}^n$

   (b) Scalar

   (c) Linear Combinations

   (d) Vector equation

   (e) Matrix equation

   (f) Span

2. **Key Concepts:**

   (a) Geometric description of vectors in $\mathbb{R}^2, \mathbb{R}^3$.

   (b) Geometric description of subset spanned by a collection of vectors in $\mathbb{R}^2, \mathbb{R}^3$.

   (c) Theorem 3 and Theorem 4.

3. **Skills to Master:**

   (a) Matrix-vector product.

   (b) Deciding whethere $b$ is a linear combination of $v_1, v_2, \ldots, v_n$ in $\mathbb{R}^m$

   (c) Deciding whether the columns of $A_{m \times n}$ span $\mathbb{R}^m$

| Homework Set no. | Date | Section | Problems |
| --- | --- | --- | --- |
| Homework Set 3 | Jan. 12th, 2001 | 1.3 | 1,5,7,9,11,12,13,17,20,25,27,31 |
| Homework Set 4 | Jan. 12th, 2001 | 1.4 | 1,5,7,9,11,15 |
| Homework Set 5 | Jan. 17th, 2001 | 1.5 | 1,5,7,11,13,15,21,22,23,35,37,39 |
| Homework Set 6 | Jan. 19th, 2001 | 1.6 | 1,3,5,7,11,13,17,21,25,27,28,29,31,39 |
| Homework Set 7 | Jan. 19th, 2001 | 1.7 | 1,3,7,9,11,13,17 |
| Homework Set 8 | Jan. 23rd, 2001 | 1.7 | 31,35,38 |

---

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

**Math 221 202**          (Take home) Quiz 2          Score

Your name _____ Student #

**Due: Tuesday, January 16th, 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 7 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. No points for turning in this sheet without the homework.*

**Syllabus:** 1.3,1.4

Solve the following questions:

1. Section 1.3: 11,19,26.

2. Section 1.4: 29,31,37.

3. We are given a $500 \times 400$ system. We construct the huge $500 \times 401$ augmented matrix, then proceed to row-reduce the matrix into reduced echelon form. We find that the matix in reduced echelon form has 401 non-zero rows. Comment on the solution set of the system and explain your answer.