LINEAR ALGEBRA, MATH 122   **Instructor: Dr. T.I. Lakoba**

Preparation sheet for Test 2

Problems on this Test will be based on the homework problems listed below.

Note 1:   You should check the original homework assignment for Hints or Notes for any of the problems listed below with an asterisk (e.g., 2*). Some problems have more than one Hint or Note, so make sure to *find and use all of them*..

Note 2:   A problem on the Test may combine concepts of more than one problems listed on this sheet, or it may use only part of the solution of a given homework problem.

Note 3:   Groups of problems from the same section that may pertain to different test problems are separated by a space.

When preparing for the Test, it will be beneficial for your performance if you **redo** the problems listed below, and also review the related examples in the notes and in the book. Please **note**: It will **not help you much** if you simply browse those problems **without actually doing them**.

On this Test, use of calculators will be allowed (although you will not really need one).
You may prepare and use one double-sided sheet with formulas.

Note: When you are asked on the Test to solve a linear system, it is expected that you do so by transforming the corresponding augmented matrix to Reduced Echelon Form (REF).
Your score will be severely reduced if you solve for the unknowns by solving the equations as opposed to using the REF.

1. Sec. 3.1: ## 19, 23, 27, 29, + Word Problems 1* & 2*.
    On the Test, you will be *required* to demonstrate that you can recognize and use the equations of lines and planes as described in Lecture Notes for Sec. 3.1. See also the next list item.

2. Sec. 3.2: ## 9, 10*, 12*, 15, 16*, 17. Do *not* prove whether the given set is a subspace. Instead, focus on the *geometric description* of the set. For a plane, state which vector it is perpendicular to. For a line, state which vector it is aligned with or, alternatively, at the intersection of which planes it lies. For either a plane or a line, state whether it goes through the origin, and explain why.

3. Sec. 3.3: ## 27, 31, 32*, 35;   43.

4. Sec. 3.4: ## 11(b,c), 15(b,c), 21(a), 23(a), 27;   1*, 6*, 7*.

5. Sec. 3.5: ## 25*;   27*.

6. Sec. 3.6: ## 3, 9*, 10*, 11*. *Note* that the last three problems ask you to find coordinates of a given vector in an *orthogonal* basis. The method of doing so is *different* from the method of finding coordinates shown in Sec. 3.4.

7. Sec. 3.7: ## 20*;   25, 29, 30*.
    On the Test, you will be *required* to solve a counterpart of # 20 by a method described in Lecture Notes for Sec. 3.7. (The idea is to use a specific method, not just solve the problem.)