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

Preparation sheet for Test 3

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.

Note 4: For the proofs on this preparation sheet, always begin by writing down what is given and what you need to prove, in *mathematical* notations. Then each proof, if done properly, will take three or fewer simple logical steps.

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 Test 3, use of calculators will be allowed (although you will not really need one).
Use may also prepare an use one double-sided formula sheet.

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. 3.8: ## 1, 3, 5.

2. Sec. 4.1: ## Word Problems 1* and 3*; also, study Example 2 from Lecture Notes.

3. Sec. 4.2: ## 7;   13, 15, 16, 17;   24;   25*, 27, 29. To check your calculations of determinants, read the Suggestion on the Homework webpage about using Matlab for that purpose.

4. Sec. 4.4: ## 5, 7*, 8*, 11* and Word Problem 3*;   15, 16*, 17*, 18(a), and Word Problems 1*, 2*. Make sure to know the results **and** proofs of all parts of Theorem 11, as well as the results of Theorems: '9&10' (posted page 19-3), 13 (Chap. 4) and 15 (Chap. 1).
   Also, review Ex. 1 in the notes for Sec. 4.4.

5. Sec. 4.5: ## 1, 3, 4*, 6*, 12*, 17;   21*, 22*.
   You must also know not only the definition of, but also the comments about, geometric multiplicity stated on posted pages 20-4 and 20-5 of Lecture Notes.