

Linear Algebra. Math-4100, Fall 2007
Assignment 4

Due Thursday, October 11, by 4pm. (Either in class, or my mailbox in AE 301, or under my door AE 405).

Reading

Sep. 24, Oct. 4: **Strang** Sections 4.1-4.3 and 4.4 (up to Gram-Schmidt, p.223).

Oct. 8, 11: **Strang** Sections 4.4, 5.1, 5.2; **Gelfand** Section 3.

Problems

You are welcome to consult the text and notes and discuss the problems with other people. However, the solutions should be *yours*. Please indicated on your papers, who you discussed the problems with. *Please submit extra credit problems on a separate sheet of paper.*

1. Problem 4.1 #22.
2. Problem 4.1 #26. Describe how you produce your matrix A .
3. Problem 4.2 #1(a) and the part of problem #3 which is related to #1(a).
4. (5 points) Find condition(s) on projection matrices P_1 and P_2 that guarantee their sum $P_1 + P_2$ being also a projection matrix. What do these conditions mean for the subspaces \mathcal{B}_1 and \mathcal{B}_2 on which the matrices project?
5. (5 points) Problem 4.2 #13.
6. (5 points) Problem 4.2 #17.
7. Problem 4.2 #19.
8. Problem 4.3 #5.
9. Problem 4.3 #12.
10. Problem 4.4 #4. Note that question (b) is somewhat silly, but it makes sense.
11. Problem 4.4 #23.
12. (5 points) Problem 4.4 #34 (see *Example 3* of Section 4.4).