MATH 108 B ADVANCE LINEAR ALGEBRA WINTER 2011

HOMEWORK #1 (due Oct. 4 in class) from the textbook
Chapter / Section / Problems :
3 / 2 / 2(f), 4(b), 5(d), 6(b) /// 3 / 3 / 3(c), 8 /// 3 / 4 / 2(b), 5 /// 4 / 2/ 10

EXTRA PROBLEMS :

1) Let $V_1, V_2, ..., V_n$ be a finite collection of sub-spaces of the vector space E. Prove that the union of $V_1, V_2, ..., V_n$ is a sub-space of E if and only if there exists $j = 1, 2, .., n$ such that V_j contains all the V_k's, $k = 1, 2, .., n$.

2) Given the vectors $\vec{v}_1 = (1,1,0)$, $\vec{v}_2 = (0,1,0)$, $\vec{v}_3 = (0,0,2)$, describe geometrically the following sets

$$B_1 = \{(x,y,z) \in \mathbb{R}^3 \,:\, (x,y,z) = \sum_{j=1}^{3} \alpha_j \vec{v}_j, \quad \alpha_j \geq 0\},$$

$$B_2 = \{(x,y,y) \in \mathbb{R}^3 \,:\, (x,y,z) = \sum_{j=1}^{3} \alpha_j \vec{v}_j, \;\; 0 \leq \alpha_j, \;\; \sum_{j=1}^{3} \alpha_j = 1\},$$

$$B_3 = \{(x,y,z) \in \mathbb{R}^3 \,:\, (x,y,z) = \sum_{j=1}^{3} \alpha_j \vec{v}_j, \;\; 0 \leq \alpha_j, \;\; \sum_{j=1}^{3} \alpha_j \leq 1\},$$

$$B_4 = \{(x,y,z) \in \mathbb{R}^3 \,:\, (x,y,z) = \sum_{j=1}^{3} \alpha_j \vec{v}_j, \quad \sum_{j=1}^{3} \alpha_j = 1\}.$$

HOMEWORK #2 (due Oct. 13 in class) from the textbook
Chapter / Section / Problems : 4 / 3 / 4, 10, 11, 12, 15, 19, 20, 21.

HOMEWORK #3 (due Oct. 20 in class) from the textbook
Chapter / Section / Problems : 5 / 1 / 2 (b), 3 (b), 3 (d), 4 (a), 4 (c), 8, 14*, 17*

HOMEWORK #4 (due Nov. 1 in class) from the textbook
Chapter / Section / Problems : 5 / 2 / 2 (d), 2 (e), 7, 8, 11/// 5 / 4 / 3, 17**

HOMEWORK #5 (due Nov. 8 in class) from the textbook
Chapter / Section / Problems : 6 / 1 / 8(a), 8(b), 11, 21(a), 23 (a), 23(c), 24(b), 24(d), 26 /// 5 / 4 / 19.

HOMEWORK #6 (due Nov. 15 in class) from the textbook
Chapter / Section / Problems : 6 / 2 / 2(a), 2(b), 11, 12, 13, 19 //// 6 / 3 / 2(a), 6, 7, 8, 12.

Extra credit problems (due Nov. 21, before noon in my mailbox)