Assignment 5.

Given Oct 27 2000, due Nov 07 2000.

(1) Do exercises 21, 22, 23 (see page 435 for definition), 25 from Chapter 6 and 6, 8, 9, 10 (Do $\mathcal{S} \cap (\mathcal{T} + \mathcal{U})$, $\mathcal{S} + (\mathcal{T} \cap \mathcal{U})$, $(\mathcal{S} \cap \mathcal{T}) + (\mathcal{S} \cap \mathcal{U})$ and $(\mathcal{S} + \mathcal{T}) \cap (\mathcal{S} + \mathcal{U})$ only, keep in mind that the statement may not be correct) from Chapter 7 of the textbook.

(2) Regarding the basis for l_∞, here is a reason why the ones given in Ex 6, Chap 6 are not basis. For any $r \in (-\infty, 0)$, define

$$A^r = (1^r, 2^r, \cdots, n^r, \cdots)$$

Show that $E = \{A^r \mid r \in (-\infty, 0)\} \subset l_\infty$, E is linear independent and E is NOT a basis. This tells you that the dimension of l_∞ is at least as much as $\mathbb{R}$. However, explicitly writing a basis may not be possible.