Math 8272 **Homework 4**
Posted: 3/9/2016; Updated: 3/24/2016; Due: Friday, 4/1/2016

The problem set is due at the beginning of the class on Friday, April 1, no kidding.

Reading: Text: Sections 7.6–8, 10.

Convention: Unless stated to the contrary, root systems are assumed to be *reduced* in the text and on the homework.

Problems from Chapter 7 (Section 7.11): **6** (See also Problem 1 below), **7** (Replace w with w^{-1} in the displayed formula), **9, 10, 11** (In Part (2), W is the Weyl group of a reduced root system of arbitrary rank), **12, 14, 15, 17**.

Problem 1. Fill another gap in the proof of Theorem 7.37. Show that $l(w) \geq l$ for a product $w = s_{i_1} \dots s_{i_l}$ of l simple reflections such that all the hyperplanes $L_{\beta_1}, \dots, L_{\beta_l}$, where $\beta_k = s_{i_1} \dots s_{i_{k-1}}(\alpha_{i_k})$, are pairwise distinct. [*Hint*: Show that each L_{β_i} must separate C_+ and $w(C_+)$.]