Math 8201 **Homework 7** **PJW**

Date due: October 28, 2002.

Hand in only the starred questions.

2*. (Graduate Algebra Exam, Fall 2002) (18%)

(a) (4%) Calculate the numbers of conjugates of each of the elements $(1,2,3,4,5)$ and $(1,2,3)(4,5,6)$ in the symmetric group S_6.

[We use cycle notation for permutations, writing them as a disjoint union of cycles.]

(b) (7%) Calculate the numbers of conjugates of each of the elements $(1,2,3,4,5)$ and $(1,2,3)(4,5,6)$ in the alternating group A_6.

(c) (7%) Show that $(1,2,3,4,5)$ and $(1,3,5,2,4)$ are not conjugate in A_6.

Section 4.4 4, 5*, 10*, 11, 12, 13*.