PROBLEM SET # 7
MATH 249

Due October 19.

1. Let L be a finite geometric distributive lattice. Prove that L is isomorphic to a Boolean lattice.

2. Prove that any interval of a geometric lattice is a geometric lattice.

3. Prove that in a geometric lattice $\mu(x, y) \neq 0$ for any $x \leq y$.

4. Prove that the posets listed below with order given by inclusion are all lattices. Find among them all modular and geometric lattices.

(1) Faces of a convex polytope;
(2) Subgroups of a finite group;
(3) Normal subgroups of a finite group.

Date: October 12, 2006.