HOMEWORK 2
DISCRETE MATHEMATICS II
DUE 01-23

(1) Describe, with explanation, the principle of inclusion–exclusion for the total number of objects in 3 heaps.

(2) A *combinatorial proof* (see Definition 1 on p. 412) or *bijective proof* is a way of showing that counting two collections of objects give the same answer, by matching the two collections rather than directly counting.

Give a combinatorial proof that the number of subsets of an n-element set is the same as the number of bit strings of length n. This means that you must give a way to match subsets and bit strings, so that each subset is matched with exactly one bit string, and conversely.

- **Four** book problems: #6.1.22(b, f–h), 37, 41, 46. Your answer for #6.1.41 will probably involve two cases.