

Math 215, Fall 05 Homework #10

Due Friday, 11/11/05 at the beginning of class

Binomial coefficients must be computed.

1. Committees of 5 individuals are to be formed from 8.
 - a) How many such committees are there?
 - b) How many committees of 5 can be formed from 8, given that two particular individuals are to be *included* on the committee?
 - c) How many committees of 5 can be formed from 8, given that two particular individuals are to be *excluded* from the committee?
 - d) How many committees of 5 can be formed from 8, given that at least one of two particular individuals is to be on the committee?
2. In the expansion of $(a + b)^{14}$, find:
 - a) The coefficient of $a^{10}b^4$;
 - b) The coefficient of a^6b^8 .
3. Let $A = \{1, 2, 3\}$ and $B = \{9, 11\}$.
 - a) Determine the number of functions from A to B .
 - b) List the different surjections $f : A \rightarrow B$. How many are there?
 - c) Determine the number of functions from B to A .
 - d) List the different injections $g : B \rightarrow A$. How many are there?.
4. Four people select a main dish from a menu of 7 items. How many choices are possible:
 - a) if a record is kept of who selected which choice (as a waiter would);
 - b) if who selected which choice is ignored (as a chef would). Analyze this part by the number of different choices made.