Assignment 1 - Due Friday, October 25

1. a) Find an expression for the number of ways in which r distingishable objects can be distributed among n cells. More than one object can go in a cell and a cell can be empty.

b) Use your formula to decide how many ways there are of distributing 7 different books among 5 students in a class.

1. a) Find an expression for the number of ways in which r indistingishable objects can be distributed among n cells. More than one object can go in a cell and a cell can be empty.

b) Use your formula to decide how many ways there are of distributing 7 of the same book to 12 students in a class.

3. Prove the following

a) $\sum_{r=0}^{n}(-1)^r \begin{pmatrix} n \\ r \end{pmatrix} = 0$

b) $\sum_{r=0}^{n} \begin{pmatrix} n \\ r \end{pmatrix} (a-1)^r = a^n$

4. If eight people are having dinner together, in how many different ways can three people order chicken, four order steak, and one order salmon?