Homework 5

Due: In class on Friday October 15th

Redo the following exercises from the Lectures Notes:
Exercise 2.2.18
Exercise 2.2.19
Exercise 2.2.20

Due: In class on Monday October 18th

Solve the following exercises from the Lecture Notes:
Exercise 4.1.25
Exercise 4.1.32

(1) Give an (a) algebraic (b) combinatorial proof of the property:

$\binom{a+b}{n} = \sum_{i=0}^{n} \binom{a}{i}\binom{b}{n-i}$

(2) Let X be a set of $n+1$ integers such that none are divisible by n. Prove there exists two elements of X such that their difference is divisible by n.

(3) What is the probability that a poker hand (5 cards) does not contain a pair (2 cards of the same kind)?

Solve the following problems from the Text Book, page 320 - 321:
Problem 14
Problem 16