In-class, Week 8, day 2

Section 6.4, Problem 28: Show that if n is a positive integer, then
$$\binom{2n}{2} = 2\binom{n}{2} + n^2$$

a) using a combinatorial argument.

b) by algebraic manipulation.

Section 7.1, Problem 16: What is the probability that a five card poker hand contains a flush, that is, five cards of the same suit? [Take a poker hand to be five cards from a 52 card deck in which each card is identified as being in one of four suits, and having one of 13 face values. Assume that each set of five cards is equally likely to be a poker hand.]

Section 7.1, Problem 34: What is the probability that Bo, Colleen, Jeff, and Rohini win the first, second, third, and fourth prizes, respectively, in a drawing if 50 people enter a contest and

a) no one can win more than one prize?

b) winning more than one prize is allowed?