Homework 2(Due on September 17)

September 10, 2012 STA 4442/5440

Problems from the Sheldon Ross book (8th Edition) Chapter 2

Page 51-54: Problem no. 10, 14, 25, 45
Page 54-57 (Theoretical Exercises): 8, 11, 16

"Socks in the drawer" problem

If you have $2n$ socks in a drawer, n white and n black, and you reach in to choose 2 socks at random,

1. Write a simple closed form formula in terms of n for the probability of choosing a matching pair of socks.
2. Show that as n tends to ∞, the probability of choosing a matching pair of socks tends to 0.5.

Boole's inequality

Assume $A_i, i = 1, 2, \ldots, n$ to be n events. Show that

$$P(\cup_{i=1}^{n} A_i) \leq \sum_{i=1}^{n} P(A_i) \tag{1}$$