Tutorial 6 Suggested Problems

Probability

Oct. 28

Chapter 4 Example 4b page 123

A product that is sold seasonally yields a net profit of b dollars for each unit sold and a net loss of l dollars for each unit left unsold when the season ends. The number of units of the product that are ordered at a specific department store during any season is a random variable having probability mass function $p(i)$, $i > 0$. If the store must stock this product in advance, determine the number of units the store should stock so as to maximize its expected profit.

Chapter 4 Example 6f (part a) page 130

A communication system consists of n components, each of which will, independently, function with probability p. The total system will be able to operate effectively if at least one-half of its components function. For what values of p is a 5-component system more likely to operate effectively than a 3-component system?

Chapter 4 Problem 4.14 page 164

Five distinct numbers are randomly distributed to players numbered 1 through 5. Whenever two players compare their numbers, the one with the higher one is declared the winner. Initially, players 1 and 2 compare their numbers; the winner then compares her number with that of player 3, and so on. Let X denote the number of times player 1 is a winner. Find $PX = i$, $i = 0, 1, 2, 3, 4$, and $E(X)$.