

IEOR 4701: Stochastic Models in Financial Engineering

Summer 2007, Professor Whitt

Homework Assignment 2: Thursday, July 10, 2007

Due on Monday, July 16 before class (10:00am); to be discussed at the recitation on Sunday evening, July 15, 4:00-6:00pm in 303 Mudd.

More Probability Review

In the Ross textbook, *Introduction to Probability Models*, read Sections 3.1-3.5 up to (not including) Example 3.22 on p. 113. To keep the reading under control, Examples 3.13-3.15 on pages 110-116 can be omitted. (The rest of Chapter 3 has interesting material, but we will not cover it.)

Problems from Chapter 3 of Ross, plus two extra ones. In all homework, show your work.

Problem 3.3

Problem 3.4

Problem 3.7

Problem 3.11

Problem 3.12

Problem 3.14

Problem 3.15

Problem 3.37

Problem 3.40 (a)

Extra Problem 1. Suppose that you flip a fair coin 1,000,000 times. What is the approximate probability of getting more than 501,500 heads?

Extra Problem 2. Suppose that you own shares of stock in the company Lewser, Inc. Suppose that the current (initial) stock price is \$100 per share. Suppose that we regard the daily changes in stock price as independent and identically distributed random variables (a simple additive random walk model). Suppose that the expected daily change is $-\$0.10$ or -10 cents per day (as one would expect from a stock with that name). Using units of dollars, suppose that the variance of the daily change is 0.25. Suppose that the distribution of the daily change is a gamma distribution. What is the approximate probability that the stock price has not dropped (is at least \$100) after 100 days?