Homework Assignment 2: Tuesday, September 9, 2003

Due before class at 10:00am on Tuesday, September 16.

Problems from Chapter 1 of *Stochastic Processes*, second edition, by Sheldon Ross. In all homework and exams, show your work. There are a lot of problems here. It thus would be good to spread it out.

*Note: It not necessary to turn in solutions for the problems for which there are answers in back of the book. That is about half the problems.*

Problem 1.5 (in Ross) (Combinatorial methods is a topic of basic probability theory. A nice treatment appears in Chapter 2 of Feller, Volume I. More in-depth material appears in early books by Riordan.)

Problem 1.6

Problem 1.7

Problem 1.9 (For an introduction to the probabilistic method, see Example 1.3. An in-depth treatment is provided by N. Alon, J. Spencer and P. Erdös, *The Probabilistic Method.*)

Problem 1.10

Problem 1.14

Problem 1.17

Problem 1.18 (Hint: Condition on the time that the first tail appears, and develop an equation to solve for the mean.)

Problem 1.20 (Hint: Condition on the left endpoint of the initial interval and develop an equation.)

Problem 1.21

Problem 1.23

Problem 1.24

Do Problem 1.28 using moment generating functions.

Do Problem 1.29 using moment generating functions.

Problem 1.31

Problem 1.34

Problem 1.43