**IEOR 6711: Stochastic Models I**

**Fall 2013, Professor Whitt**

**Homework Assignment 2: Tuesday, September 10**

**Due before class on Tuesday, September 17. To be discussed at the weekly recitation in Room 303 Mudd on Sunday, September 15, 7:00-9:00pm.**

More problems from Chapter 1 of *Stochastic Processes*, second edition, by Sheldon Ross. In all homework and exams, show your work. As always, you need not turn in problems with answers in the back.

Problem 1.6 (answer in back)

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 1.14 (answer in back)

Problem 1.17 (answer in back)

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.)

Do Problem 1.28 using moment generating functions.

Do Problem 1.29 using moment generating functions.

Problem 1.31

Problem 1.34 (answer in back)

Problem 1.43 Use the inequality to show that

$$e^{-n} \leq \frac{n!}{n^n} \quad \text{for all} \quad n \geq 1 \ .$$

Problem 1.23

Problem 1.24