IEOR 4701: Stochastic Models in Financial Engineering

Summer 2007, Professor Whitt

Homework Assignment 5: Monday, July 23, 2007

The Exponential Distribution and the Poisson Process

Due on Wednesday, July 25 before class (10:00am); to be discussed at the recitation on Tuesday evening, July 24, 7:30-9:00pm in 633 Mudd.

Read Chapter 5: Sections 5.1-5.3, up to Example 5.16 on page 304. You may also omit Examples 5.7, 5.9 (only in 9th ed.) and 5.17 (5.15 in 8th ed.).

Do the following exercises at the end of Chapter 5:

1. Hint: For (b), recall the lack-of-memory property in Section 5.2.2.

2.

3.

4.

5.

7. (Answer in back.)

9. (Hint: Start by considering whether or not machine 1 fails before time t.)

11.

26. There is an extra part (d) in the 9th edition:

(d) Suppose that you enter the system when it contains a single customer who is being served by server 2. Find the expected time you spend in the system.

39. (Hint: For parts (c) - (e), recall the central limit theorem, which is discussed in Section 2.2.)

42.