

## Homework 7, ISyE 2027 Spring 2006

Due on Monday, March 13, 2006

**Problem 1:** Hayter, Problem 4.2.6

**Problem 2:** Hayter, Problem 4.3.5

**Problem 3:** Suppose that two houses are to be built, each involving the completion of a certain key task. Completion of the task has an exponentially distributed time, with a mean of 10 hours. Assuming that the completion times are independent for the two houses, find the expected value and the variance of the following times: (a) the total time to complete both tasks, and (b) the average time to complete the two tasks.

**Problem 4:** Cars cross a certain point in the highway in accordance with a Poisson process with rate  $\lambda = 3$  per minute. If Shep blindly runs across the highway, then what is the probability that he will be uninjured if the amount of time that it takes him to cross the road is  $s$  seconds? (Assume that if he is on the highway when a car passes by, then he will be injured.) Do it for  $s = 5, 10, 20, 30$ .

**Problem 5:** Hayter, Problem 4.6.4

**Problem 6:** Hayter, Problem 5.1.4

**Problem 7:** Hayter, Problem 5.1.6 (you'll have to use the tables on pgs. 881-882 to do this)

**Problem 8:** Hayter, Problem 5.1.14