Introduction to Probability, Fall 2013

Math 30530 Section 01

Homework 9 — not to be turned in

General information

Here are some problems from Section 4.1. This homework isn't to be turned in; it is just serving as preparation for Friday's exam. I should post solutions here by Wednesday evening.

Reading

- Section 4.1

Problems

1. (a) Let X be an exponential random variable with parameter λ_1, and Y be an exponential random variable with parameter λ_2. If X and Y are independent, compute the density function of $Z = \min\{X, Y\}$, and show that it is exactly the same as the density function of the exponential random variable with parameter $\lambda_1 + \lambda_2$

   (b) By using the standard interpretation of the exponential random variable, convince yourself that it is no surprise that if $X \sim \text{exponential}(\lambda_1)$ and $Y \sim \text{exponential}(\lambda_2)$, and X and Y are independent, then $\min\{X, Y\} \sim \text{exponential}(\lambda_1 + \lambda_2)$.

2. Chapter 4, problems 1, 2, 5, 7, 9