

Grumble. This was an "easy" assignment but there were a lot of misconceptions. Always look at your answer and see if it makes sense. Ask questions in class if you're unclear.

Math 461
HW 7
Recap

1. A popular problem. Read these carefully. Why would you tell me the probability of exactly 15 passengers? This isn't what was asked.
2. An exponential distribution where you wait for the first event, and the first event is a failure, can be semantically confusing. Look at the solution. But: The probability that all 100 light bulbs are still alive at time t is $(e^{-\frac{t}{500}})^{100} = e^{-\frac{t}{5}}$, and so it's a single exponential distribution with expectation 5. That is, you'd expect 1 bulb to fail in 5 hrs.
3. When I ask you a question like this again, AND I WILL, keep in mind that the CDF has to increase from 0 to 1 and that the PDF has to be ≥ 0 . I expect a successful "graduate" of Math 461 to be able to do a problem like this rather easily. The fact that so many people couldn't differentiate $e^{-\frac{t}{5}}$ is a separate disappointment!
4. Look at the solution. After a while Φ becomes a familiar function. To clarify the end, you could take the desired plays in $\binom{5}{2}$ ways, each of which, e.g. TSSTT, has probability $(1 - \Phi(\frac{1}{2}))^3 (\Phi(\frac{1}{2}))^2$. There is no reason for $\Phi(\frac{1}{2})$ or $1 - \Phi(\frac{1}{2})$ to occur. I never asked about choosing plays ≤ 200 cm or ≥ 170 cm.