9. Exercise: Poisson practice

Exercises due May 13, 2020 05:29 IST *Completed*

Exercise: Poisson practice

1/1 point (graded)

Consider a Poisson arrival process with rate λ per hour. To simplify notation, we let $a = P(0,1)$, $b = P(1,1)$, and $c = P(2,1)$, where $P(k,1)$ is the probability of exactly k arrivals over an hour-long time interval.

What is the probability that we will have "at most one arrival between 10:00 and 11:00 and exactly two arrivals between 10:00 and 12:00"? Your answer should be an algebraic function of a, b, and c in standard notation.

(a*c)+(b^2)

✔ **Answer:** a*c+b^2

STANDARD NOTATION

Solution:

The event of interest can happen in two ways:
(i) Zero arrivals during the first hour and two arrivals over the second hour; this has probability ac.
(ii) One arrival during each one of the two hours; this has probability b^2.
Thus, the answer is $ac + b^2$. (Note that for both scenarios, we have used independence to find the associated probabilities.)

Submit You have used 1 of 3 attempts

Answers are displayed within the problem

Discussion

Hide Discussion

Topic: Unit 9: Bernoulli and Poisson processes:Lec. 22: The Poisson process / 9. Exercise: Poisson practice

Show all posts | by recent activity

Hint For me, it helped to draw out all possibilities for the second part: two intervals (bars separating intervals,...	1
Please delete if i give up the answer Why not a^2*c for the first event?	3
Hint This video [Reliability][1] could help, although this exercise is really simple to use it. But if the problem b...	6
[Staff]homogenity across the two intervals? I didnt get the answer right. When I looked at the solution, the probability assumed for the two intervals(...	4
0<= k <= 2 ? I don't see that specified anywhere.	3
What about the alternative case for 2 arrivals between 10-12? The option provided in the answer is only one of the cases that can occur, there can be 2 arrivals in the fi...	2
Hint? [deleted by sharov_am] Please, don't provide solution.	3