



MITx: 6.041x Introduction to Probability - The Science of Uncertainty



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Bookmark

Exercise: Poisson practice

(1/1 point)

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 .

**Answer:** $a*c+b^2$

Answer:


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 .


- ▶ Unit 6: Further topics on random variables
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- ▼ **Unit 9: Bernoulli and Poisson processes**

Unit overview

Lec. 21: The Bernoulli process

Exercises 21 due May 11, 2016 at 23:59 UTC 


Lec. 22: The Poisson process

Exercises 22 due May 11, 2016 at 23:59 UTC 

Lec. 23: More on the Poisson process

(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.)


You have used 1 of 2 submissions

Exercises 23 due May 11, 2016
at 23:59 UTC 

Solved problems

**Additional theoretical
material**

Problem Set 9

Problem Set 9 due May 11,
2016 at 23:59 UTC 

Unit summary

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