9. Exercise: More on fresh start

Exercise: More on fresh start

1/1 point (graded)

Consider a Bernoulli process with parameter $p = 1/3$. Let T_1 be the time of the first success and let $T_1 + T_2$ be the time of the second success. We are told that the results of the two slots that follow the first success are failures, so that $X_{T_1+1} = X_{T_1+2} = 0$. What is the conditional expectation of the second interarrival time, T_2, given this information? (Recall that the expectation of a geometric random variable with parameter p is equal to $1/p$.)

5

✔ **Answer:** 5

Solution:

After time T_1, we have two failures, and these are part of the interarrival time T_2. Given this information, the process starts fresh at time $T_1 + 3$ and the number of trials from time $T_1 + 3$ onwards until the next success is geometric with parameter $1/3$, and has an expected value of 3. Therefore, the conditional expectation of T_2, given the information we were given, is $2 + 3 = 5$.

提交 你已经尝试了2次（总共可以尝试3次）

Answers are displayed within the problem

讨论

主题： Unit 9 / Lec. 21 / 9. Exercise: More on fresh start

显示讨论