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Exponential and Uniform Distributions - Quiz

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Question 1

1/1 point (graded)

In the context of the exponential distribution, what is meant by memorylessness?

- (selected) a. If x describes the waiting time for some event, then the probability distribution of x at $t = 0$ is the same as the probability distribution of x at time $t = 1$ or $t = 100$ when the event has not occurred, for example. ✔
- b. The occurrence of any event does not depend on other events
- c. If x describes the waiting time for some event, then $p(x)$ follows a binomial distribution
- d. If x describes the waiting time for some event, the probability the event occurs is unrelated to the amount of time that has elapsed

Explanation

If you think of the variable X as the wait time for some event, the probability that the event occurs at time $t = 0$ is the same as the probability that the event occurs at time $t = 10$ even if the event has not already occurred. Going back to the soccer example, if x is the time between goals, the distribution of x is the same in the 15^{th} minute of the match as it is in the 50^{th} minute. If the match is scoreless in the 15^{th} minute, there is a certain probability distribution for the time until the next goal; if the match is still scoreless in the 50^{th} minute, the probability distribution for the time until the next goal is the same.

Submit You have used 2 of 2 attempts

✔ Correct (1/1 point)

Question 2

1 point possible (graded)

Suppose that you want to create a random variable that is exponentially-distributed in R. Which of the following methods could you use? (Select all that apply.)

- [x] a. Use *rexp()*, which creates an exponentially-distributed random variable for you
- [ ] b. Use *runif()*, which creates a uniformly-distributed random variable, and then apply an exponential function
- [x] c. Use *runif()* to create a uniformly-distributed random variable, then plug that into the inverse CDF formula given in class

- [ ] d. Use *runif()* to create a uniformly-distributed random variable, then plug that into the inverse PDF function

✔

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Discussion

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