13. Exercise: Geometric random variables

Exercises due Feb 28, 2020 05:29 IST *Completed*

Exercise: Geometric random variables

2.0/2.0 points (graded)

Let X be a geometric random variable with parameter p. Find the probability that $X \geq 10$. Express your answer in terms of p using standard notation (click on the "STANDARD NOTATION" button below.)

$\mathbf{P}(X \geq 10) =$ (1-p)^9 ✔ **Answer:** (1-p)^9

STANDARD NOTATION

Solution:

We can calculate the desired probability by adding the probabilities of the events $\{X = 10\}$, $\{X = 11\}$, $\{X = 12\}$, etc., and using the formula for the sum of a geometric series. However, we can get the answer in an easier way, using the interpretation of geometric random variables as the number of trials until the first success. The event $\{X \geq 10\}$ is the event that the the first 9 trials resulted in failure, and therefore its probability is $(1-p)^9$.

Submit You have used 2 of 3 attempts

Answers are displayed within the problem

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Other approach Hello All! I know this lecture and problem set deadline is over but I joined course late. In the problem ...	6
Hint	7
[STAFF] Confusion Hello Staff, I got my answer right . But when I read one of the discussion it also made sense to me so I...	6
What am I doing wrong? I understand the question that the probability of X is greater than or equal to 10 means a failure on t...	8
Correct, but also wrong My intuition on this problem was correct, but also wrong: In order to find the value of the probability ...	3
I don't understand the solution Hi, I don't understand the solution. Telling why might violate the forum rules. Can I ask after the dead...	2
why this answer is wrong (1-p)^9*p	3
[STAFF] Invalid Input Invalid input: Could not parse I saw the above error message when I tried submitting the assignment ...	2
why this answer wrong =p^10+p^11+p^12... =p^10(1+p+p^2+p^3.....) =p^10(1/(1-p)) =p^10/(1-p)	4
About EXAM I dont know where to post this questions,will be thankful if somebody attends it --two important ques...	5
notation to use sigma Σ Do we have a way to use Σ in the notation? It would have been much easier and convenient.	5
1-Probability ? Hi. Rather than having to sum ad infinitum (:, I just decided to do 1-P(that X is less than 10). Should do...	18
[STAFF] What would be other ways to type this answer correctly?	2