3. Exercise: Random variables

Exercises due Feb 28, 2020 05:29 IST

Exercise: Random variables

0 points possible (ungraded)

Background: a number, e.g. 2, can be thought of as a trivial random variable that always takes the value 2. Let x be a number.

Let X be a random variable associated with some probabilistic experiment.

a) Is it always true that $X + x$ is a random variable?

Yes ✔ **Answer:** Yes

b) Is it always true that $X - x = 0$?

No ✔ **Answer:** No

Solution:

a) Yes. Think of a concrete example. Let X be the height of a randomly selected student and let $x = 10$. We are dealing with the random variable $X + 10$. It is the random variable that takes the value $a + 10$, whenever the random variable X takes the value a.

b) No. Think of the same concrete example as before. The object $X - 10$, where X is the height of a randomly selected student, has no reason to be equal to 0. (We often use x to denote the realized value of X. But the problem statement never said that the number x considered here had any relation to the realized value of X.)

Submit You have used 1 of 1 attempt

Answers are displayed within the problem

Discussion

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Topic: Unit 4: Discrete random variables:Lec. 5: Probability mass functions and expectations / 3. Exercise: Random variables

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?	X vs x — does X refer to *the function*? [You can think of this as a question.] It looks like a category error to me. x [LC] is a variable that stands fo...	1
?	Clarification "Background: a number, e.g. 2, can be thought of as a trivial random variable that always takes the value...	4
?	Random variable Hi, In what sense 2 is a trivial RV when this value is already known. Thanks	5
💬	Hint. Way to think about the problem As stated in many other post. Think of X as function. So X(a)=a. For example X(1) = 1, X(5)= 5, X(25) = 25 w...	1
?	Technical error? I got correct for the questions, but in my progress page it shows 0/0 ? Can someone fix this?	5
💬	a number can be thought as a trivial r. v.???? I do not understand how the statement in the forewords. If a r.v is an "operation" a "function" how can it...	8
☑	Is x the corresponding value of X? or a completely unrelated fixed number? I presume unrelated but want to be sure	9
?	Random variable Hi, X-x =0 if in case X=x is the event. Am I right or wrong. Thanks.	4
?	About EXAM two important questions for staff please *1.Though the time allotted for exam- 1, is 48 hours, averagely ...	1
💬	Rushed Q1 Rushed Q1 and drew the incorrect conclusion that X is a Function and that a function plus anything is m...	1
💬	Question is a bit misleading, perhaps! :(Sorry, but in the preceding video, it was said that capital X or any capital letter is always used to denote t...	1