12. Exercise: Jointly continuous r.v.'s

Exercises due Mar 13, 2020 05:29 IST *Completed*

Exercise: Jointly continuous r.v.'s

2/2 points (graded)

The random variables X and Y are continuous. Is this enough information to determine the value of $\mathbf{P}\left(X^2 = e^{3Y}\right)$?

No ✔ **Answer:** No

The random variables X and Y are jointly continuous. Is this enough information to determine the value of $\mathbf{P}\left(X^2 = e^{3Y}\right)$?

Yes ✔ **Answer:** Yes

Solution:

a) There is no information on the relation between the two random variables. If, for example, $X = \sqrt{e^{3Y}}$, the probability is 1, whereas if $X = \sqrt{e^{3Y}} + 1$, then the probability is zero.

b) The set of points on the x-y plane that correspond to the event $X^2 = e^{3Y}$ is a one-dimensional curve, which has zero area, and therefore zero probability.

Submit You have used 1 of 1 attempt

Answers are displayed within the problem

Discussion

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Topic: Unit 5: Continuous random variables:Lec. 9: Conditioning on an event; Multiple r.v.'s / 12. Exercise: Jointly continuous r.v.'s

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? One dimensional set — 2
For a valid joint continuous r.v.s in the lecture it was said that a probability is not allowed to be concentr...

I need more time — 4
Now, with three (3) readings, I need more time to assimilate the concepts and complete all the exercises ...

Clarity of concept (for staff) — 1 new
Please clarify the logic of the question and the answer once we are past the submission due date . The in...

? Confused about 1a explanation — 2
Can someone explain why if $X=\sqrt{e}^{3Y}$, probability is 1, whereas if $X=\sqrt{e}3Y+1$, probability is 0?

how in solution for question no 1 $X=\sqrt{}e3Y$ has probability 1 whereas in solution for question 2 $X2=e3Y$ has zero probability?? — 3
how in solution for question no 1 $X=\sqrt{}e3Y$ has probability 1 whereas in solution for question 2 $X2=e3Y$ h...

? Zero probability in (b) — 2
[Deleted - SergK] Please respect honour code.

Is it an event or a logic? — 2
I'm puzzling if P(X^2 = e^{3Y}) is asking for the probability for an event, or for a logic? If it's event, I agree ...

? Meaning of "enough information", ask for clarification — 4
The question implies that we can actualy calculate the probability right away or that we could eventually ...

Greater than / Less than — 2
Should the probability be expressed in terms of P(X^2=e^(3Y)) be expressed in terms of greater than or l...

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