

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

Exercise: Jointly continuous r.v.'s

1/2 points (graded)

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

我原来觉得，连续概率在任意一点的概率都应该是0

Yes ✖ Answer: No

但是这题不是这个意思：

比如万一他们在任何的时候都相等，那么就不是0了。
或者他们有一半的时候相等，概率就是0.5

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

但是如果他们是联合连续的话，就代表他们必须扩散于整个平面，
不存在重合的可能性。

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.

提交

You have used 1 of 1 attempt

i Answers are displayed within the problem

讨论

显示讨论

Topic: Unit 5 / Lec. 9 / 12. Exercise: Jointly continuous r.v.'s

Learn About Verified Certificates