17. Exercise: From joint PDFs to the marginals

Exercise: From joint PDFs to the marginals

5/5 points (graded)

For each one of the following formulas, identify those that are always true. All integrals are meant to be from $-\infty$ to ∞.

$$f_{X,Z}(a,b) = \int f_{X,Y,Z}(a',b,c)\,da'$$

No ▼ ✔ **Answer:** No

$$f_{X,Z}(a,c) = \int f_{X,Y,Z}(a,b,c)\,db$$

Yes ▼ ✔ **Answer:** Yes

$$f_{X,Z}(a,b) = \int f_{X,Y,Z}(a,b,c)\,dc$$

No ▼ ✔ **Answer:** No

$$f_Y(a) = \int\int\int f_{U,V,X,Y}(a,b,c,s)\,db\,dc\,ds$$

No ▼ ✔ **Answer:** No

$$f_Y(a) = \int\int\int f_{U,V,X,Y}(s,c,b,a)\,db\,dc\,ds$$

Yes ▼ ✔ **Answer:** Yes

Solution:

In each case, we need to “integrate out" the arguments associated with random variables that do not appear on the left-hand side. Thus, the correct formulas are:

$$f_{X,Z}(a,c) = \int f_{X,Y,Z}(a,b,c)\,db$$

and

$$f_Y(a) = \int\int\int f_{U,V,X,Y}(s,c,b,a)\,db\,dc\,ds.$$

提交 You have used 1 of 1 attempt

Answers are displayed within the problem

讨论

显示讨论

Topic: Unit 5 / Lec. 9 / 17. Exercise: From joint PDFs to the marginals

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