



MITx: 6.041x Introduction to Probability - The Science of Uncertainty



Bookmarks

- ▶ Unit 0:
Overview
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Probability
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Unit overview

**Lec. 8: Probability
density functions**

Exercises 8 due Mar
16, 2016 at 23:59 UT

**Lec. 9:
Conditioning on
an event; Multiple
r.v.'s**

Exercises 9 due Mar
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Unit 5: Continuous random variables > Lec. 9: Conditioning on an event; Multiple
r.v.'s > Lec 9 Conditioning on an event Multiple r v s vertical7



Bookmark

Exercise: From joint PDFs to the marginals

(5/5 points)

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

Answer:

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:

Lec. 10:
Conditioning on a
random variable;
Independence;
Bayes' rule

Exercises 10 due Mar
 16, 2016 at 23:59 UTC

Standard normal
table

Solved problems

Problem Set 5

Problem Set 5 due Mar
 16, 2016 at 23:59 UTC

Unit summary

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

and

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

You have used 1 of 1 submissions

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