



Bookmarks

- ▶ Unit 0: Overview
- ▶ Entrance Survey
- ▶ Unit 1: Probability models and axioms
- ▶ Unit 2: Conditioning and independence
- ▶ Unit 3: Counting
- ▶ Unit 4: Discrete random variables
- ▼ Unit 5: Continuous random variables

Unit overview

Lec. 8: Probability density functions

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

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

Exercises 9 due Mar 16, 2016 at 23:59 UTC

Unit 5: Continuous random variables &gt; Problem Set 5 &gt; Problem 7 Vertical: Bayes' rule



Bookmark

## Problem 7: Bayes' rule

(2/2 points)

Let  $K$  be a discrete random variable with PMF

$$p_K(k) = \begin{cases} 1/3, & \text{if } k = 1, \\ 2/3, & \text{if } k = 2, \\ 0 & \text{otherwise.} \end{cases}$$

Conditional on  $K = 1$  or  $2$ , random variable  $Y$  is exponentially distributed with parameter  $1$  or  $1/2$ , respectively.Using Bayes' rule, find the conditional PMF  $p_{K|Y}(k | y)$ . Which of the following is the correct expression for  $p_{K|Y}(2 | y)$  when  $y \geq 0$ ?

☐ 
$$\frac{\frac{1}{3}e^{-y/2}}{\frac{1}{3}e^{-y} + \frac{2}{3}e^{-y/2}}$$

☒ 
$$\frac{e^{-y/2}}{e^{-y} + e^{-y/2}} \quad \checkmark$$

☐ 
$$\frac{\frac{1}{3}e^{-y}}{\frac{1}{3}e^{-y} + \frac{2}{3}e^{-y/2}}$$

☐ 
$$\frac{e^{-y}}{e^{-y} + e^{-y/2}}$$

**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**

*You have used 1 of 2 submissions*

## DISCUSSION

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