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 $p_{K|Y}(k \mid y)$. Which of the following is the correct expression for $p_{K|Y}(2 \mid y)$ when $y \geq 0$?

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

You have used 1 of 2 submissions

DISCUSSION

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