



1

Final Exam due May 20, 2020 05:29 IST Completed

## Problem 1

4.0/4.0 points (graded)

Let  $X$  and  $Y$  be jointly continuous nonnegative random variables. A particular value  $y$  of  $Y$  is observed and it turns out that  $f_{X|Y}(x | y) = 2e^{-2x}$ , for  $x \geq 0$ .

1. Find the LMS estimate (conditional expectation) of  $X$ .



2. Find the conditional mean squared error  $\mathbf{E}[(X - \widehat{X}_{\text{LMS}})^2 | Y = y]$ .



3. Find the MAP estimate of  $X$ .



4. Find the conditional mean squared error  $\mathbf{E}[(X - \widehat{X}_{\text{MAP}})^2 | Y = y]$ .



Submit

You have used 1 of 3 attempts



## Error and Bug Reports/Technical Issues

Hide Discussion

**Topic:** Final Exam:Final Exam / 1

Show all posts ▼

by recent activity ▼

💬 My answers for Q1 of the Final  
a. 1/2 b. 1/4 c. 0 d. 1/2

10

💬 Are all questions conditional on y?

2

© All Rights Reserved

