



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



Bookmarks

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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

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Bookmark

Exercise: Exponential CDF

(2/2 points)

Let \mathbf{X} be an exponential random variable with parameter 2.

Find the CDF of \mathbf{X} . Express your answer in terms of x using standard notation. Use 'e' for the base of the natural logarithm (e.g., enter $e^{(-3*x)}$ for e^{-3x}).

a) For $x \leq 0$, $F_X(x) =$ ✓ Answer: 0

b) For $x > 0$, $F_X(x) =$ ✓

Answer: $1 - e^{(-2*x)}$

Answer:

a) Since \mathbf{X} is a nonnegative random variable,
 $F_X(x) = \mathbf{P}(X \leq x) = 0$ for $x \leq 0$.

b) We have seen that for an exponential random variable with parameter λ and for any $a > 0$, we have $\mathbf{P}(X \geq a) = e^{-\lambda a}$.
 Therefore,
 $F_X(x) = \mathbf{P}(X \leq x) = 1 - \mathbf{P}(X \geq x) = 1 - e^{-\lambda x} = 1 - e^{-2x}$.

You have used 1 of 2 submissions

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

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