12. Exercise: Exponential CDF

Exercises due Mar 13, 2020 05:29 IST *Completed*

Exercise: Exponential CDF

2/2 points (graded)

Let X be an exponential random variable with parameter 2.

Find the CDF of 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 $x \leq 0$, $F_X(x) =$ 0

✔ **Answer:** 0

0

b) For $x > 0$, $F_X(x) =$ 1-e^(-2*x)

✔ **Answer:** 1-e^(-2*x)

$1 - e^{-2 \cdot x}$

STANDARD NOTATION

Solution:

a) Since 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,
$F_X(x) = \mathbf{P}(X \leq x) = 1 - \mathbf{P}(X \geq x) = 1 - e^{-\lambda x} = 1 - e^{-2x}$.

Submit You have used 2 of 3 attempts

Answers are displayed within the problem

Discussion

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contradictory answer..	for question a) x<=0. answer is 0 now for question b) x>0 the answer should be 1-0 =1.. rather the answe...	1
For x<=0 why Fx(x) isn't 2?	By definition fx(x) = l * e^((-l)*x) when x >= 0. For x<= 0, point x=0 still applies and for l=2 it's 2. I'm wonde...	3 new
Inconsistencies in solving these 2?	I found the questions and answers a bit strange. I feel like we are doing 2 different things in each of thes...	7
negative values possible for CDF???	I must be screwing up my integration, but somehow I am getting an answer that evaluates to a negative ...	3
12b	for number b, I totally understand the P(x>a)=1-P(x<a) and also I understood that CDF= P(X<x) But what I...	3
Question 2 is not well stated	Question 2 is not well stated , i end up providinf the CDF value in the form of expression substituting val...	3
integral in standard notation	if these questions need to insert the notation of integral, how can I put it in?	2