12. Exercise: Exponential CDF

Exercise: Exponential CDF

1/2 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

b) For $x > 0$, $F_X(x) =$ -e^(-2*x) ✖ **Answer:** 1-e^(-2*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,
$F_X(x) = \mathbf{P}(X \leq x) = 1 - \mathbf{P}(X \geq x) = 1 - e^{-\lambda x} = 1 - e^{-2x}$.

提交 You have used 3 of 3 attempts

Answers are displayed within the problem

讨论

显示讨论

Topic: Unit 5 / Lec. 8 / 12. Exercise: Exponential CDF

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