Exercise: Exponential CDF

(2/2 points)

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 $x > 0$, $F_X(x) =$ 1-e^(-2*x) ✔

Answer: 1-e^(-2*x)

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

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