

ASSIGNMENT 2

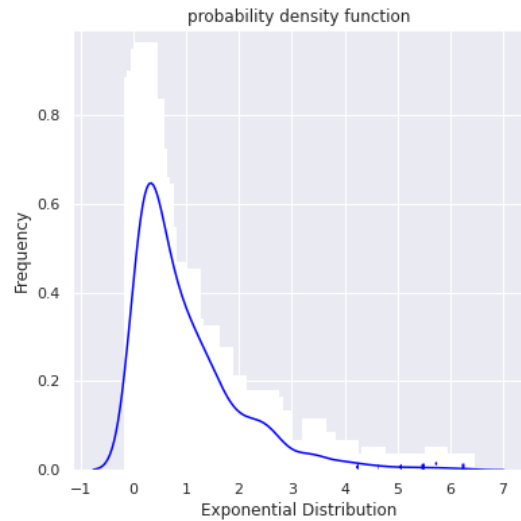
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Download all python codes from

https://github.com/manik2255/AI1103-PROBABILITY-AND-RANDOM-VARIABLES/blob/main/ASSIGNMENT_2/ASSIGNMENT_2_GRAPH.py

and latex-tikz codes from

https://github.com/manik2255/AI1103-PROBABILITY-AND-RANDOM-VARIABLES/blob/main/ASSIGNMENT_2/ASSIGNMENT_2.tex



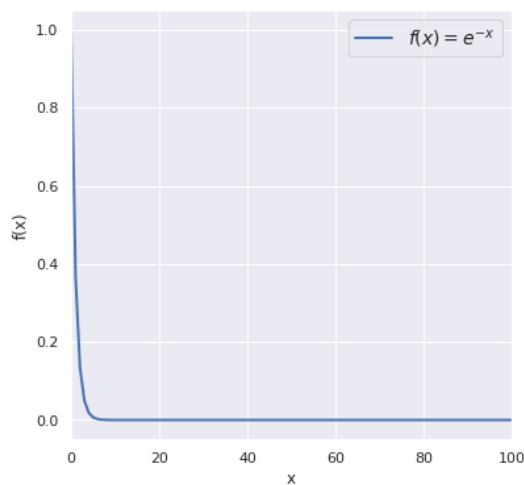
1 PROBLEM.GATE.14

A continuous random variable X has a probability density function $f(x) = e^{-x}, 0 < x < \infty$. Then $P(X > 1)$ is

2 SOLUTION

Given,

$$f(x) = e^{-x}, 0 < x < \infty \quad (2.0.1)$$



Using (2.0.1) in (2.0.2)

$$\Pr(X > 1) = \int_1^{\infty} e^{-x} dx \quad (2.0.3)$$

$$= [-e^{-x}]_1^{\infty} \quad (2.0.4)$$

$$= (-e^{-\infty}) - (-e^{-1}) \quad (2.0.5)$$

$$= e^{-1} \quad (2.0.6)$$

$$\Rightarrow \Pr(X > 1) = \frac{1}{e} \quad (2.0.7)$$

We have to find $\Pr(X > 1)$,

$$\Pr(X > 1) = \int_1^{\infty} f(x) dx \quad (2.0.2)$$