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

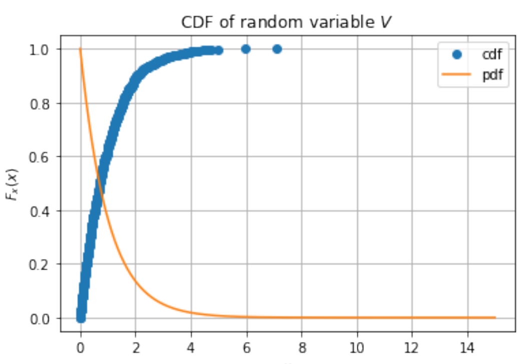
1 Problem.GATE.14

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,

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



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

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

Using (2.0.1) in (2.0.2)

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

$$= \left[-e^{-x}\right]_1^\infty \tag{2.0.4}$$

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

$$= e^{-1} \tag{2.0.6}$$

$$\implies \Pr(X > 1) = \frac{1}{e} \tag{2.0.7}$$