Assignment2

CS20Btech11035 -NYALAPOGULA MANASWINI

Download python code from

https://github.com/N−Manaswini23/Assignment−2/blob/main/assign2%20(1).py

GATE QUESTION 63

Let the random variable X have the distribution function:

$$F(x) = \begin{cases} 0 & x < 0 \\ \frac{x}{2} & 0 \le x < 1 \\ \frac{3}{5} & 1 \le x < 2 \\ \frac{1}{2} + \frac{x}{8} & 2 \le x < 3 \\ 1 & x \ge 3 \end{cases} \tag{0.0.1}$$

Then $P(2 \le X \le 4)$ is equal to

SOLUTION

Let X be a binomial random variable.
Cumulative distribution function F(x) is given in (0.0.1)
CDF(cumulative distribution function) of a random variable X is defined as follows:

$$F_X(r) = \Pr(X \le r) \tag{0.0.2}$$

we need to find $P(2 \le x < 4)$

$$P(2 \le x < 4) = F(4) - F(2) \tag{0.0.3}$$

$$= 1 - (\frac{1}{2} + \frac{2}{8}) \tag{0.0.4}$$

$$= \frac{1}{4} \tag{0.0.5}$$

$$\therefore P(2 \le X < 4) = \frac{1}{4} \tag{0.0.6}$$

$$\tag{0.0.7}$$