Q.No.	DAY - 75
467	**EXERCISE 11.2** 3. Find the probability mass function and cumulative distribution function of number of girl child in families with 4 children, assuming equal probabilities for boys and girls.
468	6. A random variable X has the following probability mass function. $\begin{array}{\|c\|c\|c\|c\|c\|c\|}\hline x & 1 & 2 & 3 & 4 & 5 \\ \hline f(x) & k^2 & 2k^2 & 3k^2 & 2k & 3k \\ \hline \end{array}$ Find (i) the value of k (ii) $P(2 \le X < 5)$ (iii) $P(3 < X)$
469	**Example 11.11** Find the constant C such that the function $f(x) = \begin{cases} Cx^2 & 1 < x < 4 \\ 0 & \text{Otherwise} \end{cases}$ is a density function, and compute (i) $P(1.5 < X < 3.5)$ (ii) $P(X \le 2)$ (iii) $P(3 < X)$.
470	**Example 11.12** If X is the random variable with probability density function $f(x)$ given by, $f(x) = \begin{cases} x-1, & 1 \le x < 2 \\ -x+3, & 2 \le x < 3 \\ 0 & \text{otherwise} \end{cases}$ find (i) the distribution function $F(x)$ (ii) $P(1.5 \le X \le 2.5)$

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Example 11.15

Let X be a random variable denoting the life time of an electrical equipment having probability density function

$$f(x)=\begin{cases} k\,e^{-2x} & \text{for } x>0 \\ 0 & \text{for } x\le 0. \end{cases}$$

Find (i) the value of k (ii) Distribution function (iii) $P(X<2)$ (iv) calculate the probability that X is at least for four unit of time (v) $P(X=3)$

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EXERCISE11.3

2. The probability density function of X is $f(x)=\begin{cases} x & 0<x<1 \\ 2-x & 1\le x<2 \\ 0 & \text{otherwise} \end{cases}$

Find (i) $P(0.2\le X<0.6)$ (ii) $P(1.2\le X<1.8)$

(iii) $P(0.5\le X<1.5)$

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5. If X is the random variable with probability density function $f(x)$ given by, $f(x)=\begin{cases} x+1, & -1\le x<0 \\ -x+1, & 0\le x<1 \\ 0 & \text{otherwise} \end{cases}$

then find (i) the distribution function $F(x)$ (ii) $P(-0.5\le X\le 0.5)$

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6. If X is the random variable with distribution function

$F(x)$ given by, $F(x)=\begin{cases}0, & x<0\\ \frac{1}{2}\left(x^2+x\right) & 0\le x<1\\ 1, & x\ge 1\end{cases}$

then find (i) the probability density function $f(x)$

(ii) $P(0.3\le X\le 0.6)$

End of the chapter 11