

## Uniform distribution - Problems for Practice

1. If  $X$  is uniformly distributed over  $(0,10)$  find (i)  $P(X < 2)$ , (ii)  $P(X > 8)$ , (iii)  $P(3 < X < 9)$

$$\text{Ans: (i). } \frac{1}{5} \text{ (ii). } \frac{1}{5} \text{ (iii). } \frac{3}{5}$$

2. Let  $X$  be uniformly distributed r. v over  $(0,1)$ . Determine the generating function and hence find the mean and variance.

$$\text{Ans: } f(x) = 1, 0 < x < 1, M_x(t) = \frac{1}{t}(e^t - 1)$$

$$\text{Mean} = \frac{1}{2}, \text{Variance} = \frac{1}{12}$$

3. Let  $X$  be a uniformly distributed r. v in the interval  $(a, 9)$  and  $P(3 < X < 5) = \frac{2}{7}$   
Find (i).  $a$  (ii).  $P(|X - 5| < 2)$ .

$$\text{Ans: (i). } a = 2 \text{ (ii). } 4/7$$

4. If  $X$  has uniform distribution in  $(-a, a)$ ;  $a > 0$ , find  $a$  such that  $P(|X| < 1) = P(|X| > 1)$

$$\text{Ans: } a = 2$$