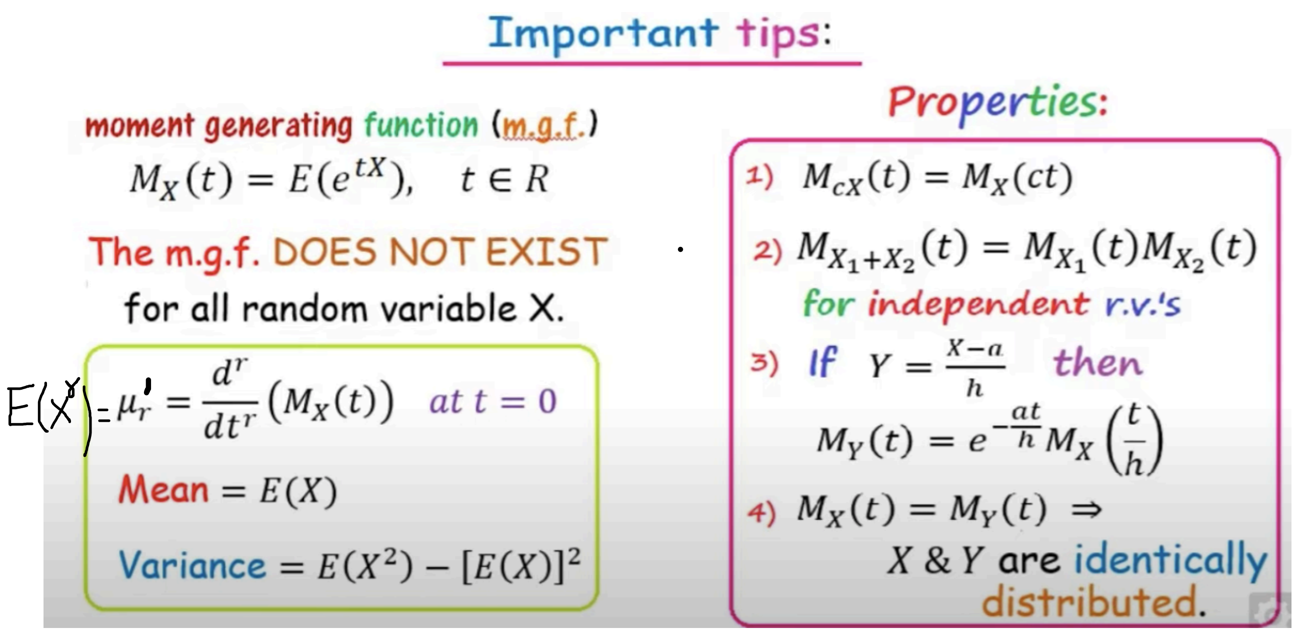

If $X \sim B(x; n, p)$ with m.g.f. given as $(0.2 + 0.8e^t)^7$, then $\mu_2{}' =$

35.41
40.33
32.48
29.74

For a random variable X, with m.g.f. $M_X(t) = (1-2t)^{-3}$, the value of $E(X^3)$ is

a)120 b)240 c)360 d) 480

Ans d

For a random variable X, with m.g.f $M_X(t) = e^{t^2-3t}$ and $E(X^2) = 11$, the value of Variance of X is

a) 20 b) 14 c) 2 d) 9

Ans c

For a random variable X, m.g.f $M_X(t) = \frac{1}{(1-3t)^2}$ and $Y = 3X$, then $M_Y(t) =$

(A) $\frac{3}{(1-3t)^2}$ (B) $\frac{9}{(1-3t)^2}$ (C) $\frac{1}{(3-t)^2}$ (D) $\frac{1}{(1-9t)^2}$

Ans d

For a random variable X, m.g.f $M_X(t) = \frac{e^t}{(1-t)}$ and $Y = X + 3$, then $M_Y(t) =$

(A) $\frac{3e^t}{(1-t)}$ (B) $\frac{e^{4t}}{(1-t)}$ (C) $\frac{e^t+3-3t}{(1-t)}$ (D) $\frac{e^t}{(1-t)}$

If $X \sim P(x;\lambda)$ with m.g.f. given as $e^{5(e^t-1)}$, then $\sigma^2 =$ **[1]**

a) 16 b) 50 c) 30 d) 5

Ans d

The moment generating function of a random variable X is given by

$$M_X(t) = \frac{1}{6} + \frac{1}{3}e^t + \frac{1}{3}e^{2t} + \frac{1}{6}e^{3t}, \quad -\infty < t < \infty.$$

Then $P(X \le 2)$ equals

a) 1/3 b) 1/6 c) ½ d) 5/6

Ans d

$$M_x(t) = \sum e^{tx} \cdot p(x)$$

x	0	1	2	3
$p(x)$	$1/6$	$1/3$	$1/3$	$1/6$

For a random variable X, m.g.f $M_X(t) = \frac{1}{(1-3t)^2}$ and $Y = 3X$, then $M_Y(t) =$

(A) $\frac{3}{(1-3t)^2}$ (B) $\frac{9}{(1-3t)^2}$ (C) $\frac{1}{(3-t)^2}$ (D) $\frac{1}{(1-9t)^2}$

Ans d

For a random variable X, m.g.f $M_X(t) = \frac{e^t}{(1-t)}$ and $Y = X + 3$, then $M_Y(t) =$

(A) $\frac{3e^t}{(1-t)}$ (B) $\frac{e^{4t}}{(1-t)}$ (C) $\frac{e^t+3-3t}{(1-t)}$ (D) $\frac{e^t}{(1-t)}$

Ans b

If m.g.f. for a random variable X is

$$\rightarrow M_X(t) = \left(\frac{e^{t/2}+e^{-t/2}}{2}\right)^2, -\infty < t < \infty$$

Then m.g.f. of $Y = 2X$ is ______

$$\left(\frac{e^{t}+e^{-t}}{2}\right)^2$$

$2X \rightarrow \quad M(2t)$

$X \rightarrow$

$cX \rightarrow \quad t \rightarrow 2t$

$\quad ct$

Let $Y = 2X + 3$. If $M_X(t)$ and $M_Y(t)$ are the moment generating functions of X and Y, respectively then $M_Y(t)$ is

a) $e^{-3t}M_X(2t)$ b) $e^{3t}M_X(2t)$ c) $e^{2t}M_X(3t)$ d) $e^{-2t}M_X(3t)$

$Y = X - a$

$M_Y = e^{-at} \cdot M_X(t)$

$= e^{3t} M_X(2t)$

The m.g.f. of a random variable X is given by $M_X(t) = e^{3(e^t-1)}$. The value of $P(X = 1)$.

a) 0.1494 b) 0.1532 c) 0.5671 d) none of these

Ans d

If the mgf of the negative binomial distribution is $\left(\frac{2e^t}{3-e^t}\right)^3$, then the variance is

a) 9/2 b) 9/4 c) 3/2 d) none

Ans b

If the mgf of the geometric distribution is $\frac{2e^t}{3-e^t}$, then the probability of 1^{st} success in 4^{th} trial is

a) 2/9 b) 1/81 c) 2/81 d) none

Ans c