

Suppose a discrete random variable X takes the values $\{3, 4, 5\}$ with non-zero probability. All other values have zero probability. Assume $P(X = 3) = a$, $P(X = 4) = b$ and $P(X = 5) = c$.

1. Write the generating function $G_X(t)$ of X .

2. Evaluate $G_X'(1)$.

3. Write the moment generating function $M_X(t)$ of X .

4. Suppose Y is a random variable and $G_Y(t) = (1/2)t^2 + (1/3)t^8 + (1/6)t^{10}$. What is the pmf of Y ?

5. Write the moment generating function $M_Y(t)$ of Y .