

Let another r.v. Y be a discrete random var.

$$PMF(Y) = \begin{cases} 1/10 & y = -20 \\ 2/10 & y = -3 \\ 3/10 & y = 4 \\ 4/10 & y = 5 \\ 0 & \text{otherwise} \end{cases}$$

Note that

$$mgf_Y(t) = \frac{1}{10} \exp(-20t) + \frac{1}{5} \exp(-3t) + \frac{3}{10} \exp(4t) + \frac{2}{5} \exp(5t)$$

By uniqueness theorem for MGFs,

we conclude ~~distrib~~ⁿ of r.v. X
is the same as that of Y .

$$\Rightarrow PMF(X) = \begin{cases} 1/10 & x = -20 \\ 2/10 & x = -3 \\ 3/10 & x = 4 \\ 4/10 & x = 5 \\ 0 & \text{otherwise} \end{cases}$$

This holds because
 $MGF_X(t) = MGF_Y(t)$
for all values of t .

$$\Rightarrow P(|X| \leq 2) = 0$$