

Name: _____

Consider n independent Bernoulli random variables, each with a different probability of success [e.g., taking n pennies from a jar, each of which has a different probability of heads.] That is,

$$X_i \sim \text{Bernoulli}(p_i)$$

Using moment generating functions, show that the sum of the n Bernoullis is not Binomial. That is, find the moment generating function for $Y = X_1 + X_2 + \cdots + X_n$ and comment.