$= \sum_{n=1}^{\infty} P(X_n \in B \cap G) \{P(X_n \notin B)\}^{n-1}$ ($\because X_n$'s are iid)

$= P(X_1 \in B \cap G) \sum_{n=1}^{\infty} \{P(X_1 \notin B)\}^{n-1}$

$= P(X_1 \in B \cap G) \cdot \dfrac{1}{1-P(X_1 \notin B)} = \dfrac{P(X_1 \in B \cap G)}{P(X_1 \in B)}$

$= P(X_1 \in G \mid X_1 \in B) = P(X_1 \leq x \mid X_1 \in B)$ which is the truncated distribution of X.

The efficiency of the ~~a~~ algorithm is measured by $E(N)$. The lower is the value of $E(N)$, better is the algorithm.

Now, $N \sim NB(1, p)$ where $p = P(X_1 \in B)$
$\hookrightarrow q^{n-1} p, n \geq 1$

$$E(N) = \frac{1}{p} = \frac{1}{P(X_1 \in B)}$$

If $P(X_1 \in B)$ is too large, the algorithm is close to the efficient.

<u>Assignment</u>

Draw obs. from truncated normal, binomial & exponential distns.