Instructions: Please set the following using equation labels (don’t cheat!). Experiment with the following commands:

\quad \Pr \ \rho \ \lambda \ \dots \ \in

Let $X$ be a discrete random variable taking values in $S = \{0, 1, \ldots\}$ and suppose that

$$Pr(X = n) = e^{-\lambda} \frac{\lambda^n}{n!}, \quad n = 0, 1, \ldots$$  \hspace{1cm} (1)

We say that $X$ has a Poisson distribution if its probability function is given by (1), where $\lambda > 0$. $X$ has a geometric distribution if its probability function is given by (2), immediately below, with $\rho \in (0, 1)$.

$$Pr(X = n) = (1 - \rho)\rho^n, \quad n = 0, 1, \ldots$$  \hspace{1cm} (2)