Mean: $E[X] = \lambda$

Variance: $Var(X) = \lambda$

Moment GF: $M_X(t) = \exp\{\lambda(e^t - 1)\}, \ t \in \mathbb{R}$

Properties:
1. If $X_1 \sim \text{Poisson}[\lambda_1]$, $X_2 \sim \text{Poisson}[\lambda_2]$, and $X_1, X_2$ are independent, then $X_1 + X_2 \sim \text{Poisson}[\lambda_1 + \lambda_2]$

2. If $X \sim \text{Binomial}[n,p]$ where $n$ is large, $p$ is small, and $np$ is moderate in size, then $X \approx \text{Poisson}[np]$

3. If the number of events occurring per unit time is Poisson[$\lambda$], then the waiting time until the first occurrence is Exponential[$\lambda$], and the waiting time until the $n^{th}$ occurrence is Gamma[$n,\lambda$]

Truncated Mass Function Bar Charts for Selected Poisson Distributions:

[Charts showing bar plots for Poisson distributions with parameters 3.25 and 3.75]