https://classroom.github.com/a/Y0Mi_a_j

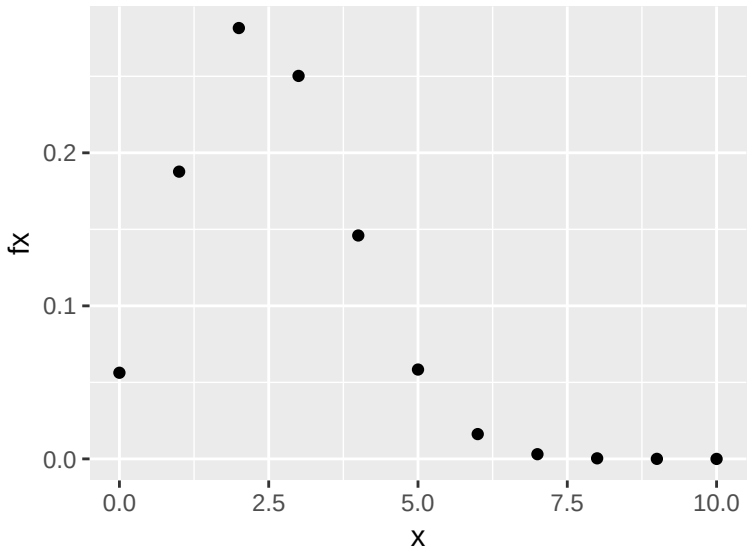
Assume $X_1, \ldots, X_N \sim_{iid} \text{Poisson}(\lambda)$. The Poisson probability density function is

$$f(x|\lambda) = \frac{e^{-\lambda}\lambda^x}{x!}$$

for $x \in \mathbb{N}$.

1. Plot the probability density function for a Poisson distribution. The code I used for the binomial distribution is below.

```
suppressMessages(library(tidyverse))
df <- tibble(x = 0:10, fx = dbinom(x, 10, 0.25))
ggplot(df, aes(x, fx)) + geom_point()
```




```
## hint: ?dpois
```

2. Find the maximum likelihood estimator of λ, that is the best guess of the unknown population parameter λ based on the data $\mathbf{X}$. Call your estimator $\hat{\lambda}$. Show your work by typing out the appropriate LaTeX.

3. Randomly sample $N = 1001$ random Poisson variables with your choice of λ, and store it into a variable named `x`.

4. Use your maximum likelihood estimator to estimate λ, based on your randomly sampled data `x`.