Problem Set 1, Q2:

In Q1, I showed that in the limit of large $\lambda$, poisson distribution goes to gaussian.

$$p(n) = \frac{e^{-\lambda} \lambda^n}{n!}$$

$$n = x + \lambda$$

$$p(x) = e^{-\frac{1}{2} x^2/\lambda}$$

$$f(x) = \frac{1}{\sqrt{2\pi\sigma^2}} e^{-\frac{1}{2}\left(\frac{x-\mu}{\sigma}\right)^2}$$

we know that $\sigma$ in this case will be:

$$\sigma = \sqrt{\mu}$$

$$\rightarrow f(x) = \frac{1}{\sqrt{2\pi\mu}} e^{-\frac{1}{2}(x-\mu)^2 \mu^{-1}}$$