

[lex149] Mean and variance of Poisson distribution

The well-known probability distribution named Poisson distribution,

$$P(n) = \frac{a^n}{n!} e^{-a} \quad : \quad n = 0, 1, 2, \dots,$$

depends on a single parameter $a > 0$. Use elementary means to show that

- (a) the distribution is properly normalized,
- (b) the mean and variance are $\langle n \rangle = \langle n^2 \rangle = a$.

Solution: