a) $$\sum_{k=0}^{\infty} e^{-\lambda}\frac{\lambda^k}{k!} = 1$$

$$e^{-\lambda}\sum_{k=0}^{\infty}\frac{\lambda^k}{k!} = e^{-\lambda}e^{\lambda} = e^{0} = 1$$

Rozwinięcie w szereg Taylora w zerze

$$e^{\lambda} = \sum_{k=0}^{\infty}\frac{\lambda^k}{k!}(e^0)^{(k)} = \sum_{k=0}^{\infty}\frac{\lambda^k}{k!}$$

b) $$\sum_{k=0}^{\infty} k\, e^{-\lambda}\frac{\lambda^k}{k!} = \lambda$$

$$\lambda\sum_{k=0}^{\infty}\cancel{k}\, e^{-\lambda}\frac{\lambda^{k-1}}{\underset{(k-1)!}{\cancel{k!}}} = 0 + \lambda\sum_{k=1}^{\infty} e^{-\lambda}\frac{\lambda^{k-1}}{(k-1)!} = \lambda\sum_{k=0}^{\infty} e^{-\lambda}\frac{\lambda^k}{k!} = \lambda\cdot 1 = \lambda$$