

* Another solution For pb 1.4.2 p.32

For exp. distⁿ, the CDF is

$$F(x) = 1 - e^{-\lambda x}, \quad x \geq 0$$

- To get the median, solve the eqⁿ

$$F(m) = 0.5$$

$$\text{i.e. } F(m) = 1 - e^{-\lambda m} = 0.5$$

$$\text{So, } e^{-\lambda m} = 0.5$$

$$\Rightarrow -\lambda m = \ln 0.5$$

$$\therefore m = \frac{-\ln 0.5}{\lambda}$$

$$\therefore m = \frac{\ln 2}{\lambda}$$

∴ the mean is $\mu = \frac{1}{\lambda}$

clearly, mean $>$ median, where $\ln 2 = 0.7$,
for $X \sim \text{exp}(\lambda)$. #