

## hw\_I

Find the Exp. Value of The exponential distr. with parameter  $\lambda$ .

Hint:  $\int_0^{\infty} y e^{-y} dy = 1$ .

For exponential distr:  $f(x) = \lambda e^{-\lambda x}$ . Then,

$$E[x] = \int_{-\infty}^{\infty} x f(x) dx = \int_0^{\infty} \lambda x e^{-\lambda x} dx$$

$$= \frac{1}{\lambda} \int_0^{\infty} y e^{-y} dy = \boxed{\frac{1}{\lambda}}$$

$$\begin{aligned} y &= \lambda x \\ dy &= \lambda dx \end{aligned}$$

