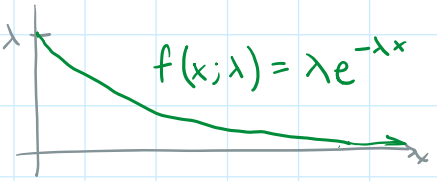
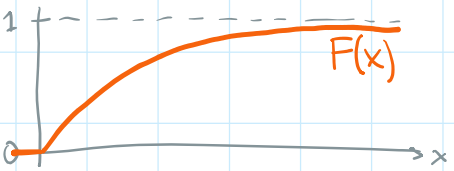
EXPONENTIAL DISTRIBUTION

The times between events in a Poisson process are exponentially distributed.

- **pdf:** $f(x;\lambda) = \begin{cases} \lambda e^{-\lambda x} & x > 0 \\ 0 & \text{otherwise.} \end{cases}$



- **cdf:** $F(x) = \begin{cases} 1 - e^{-\lambda x} & \text{for } x > 0 \\ 0 & \text{otherwise.} \end{cases}$



- **mean:** $E(X) = \frac{1}{\lambda}$
- **variance:** $\mathrm{Var}(X) = \frac{1}{\lambda^2}$ $\qquad \sigma_X = \frac{1}{\lambda}$