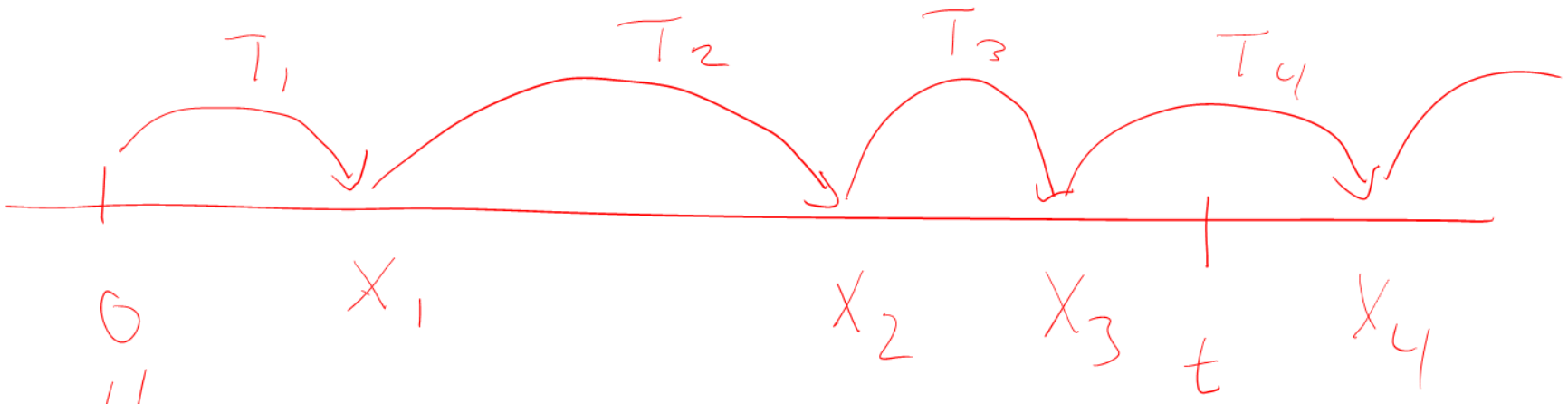
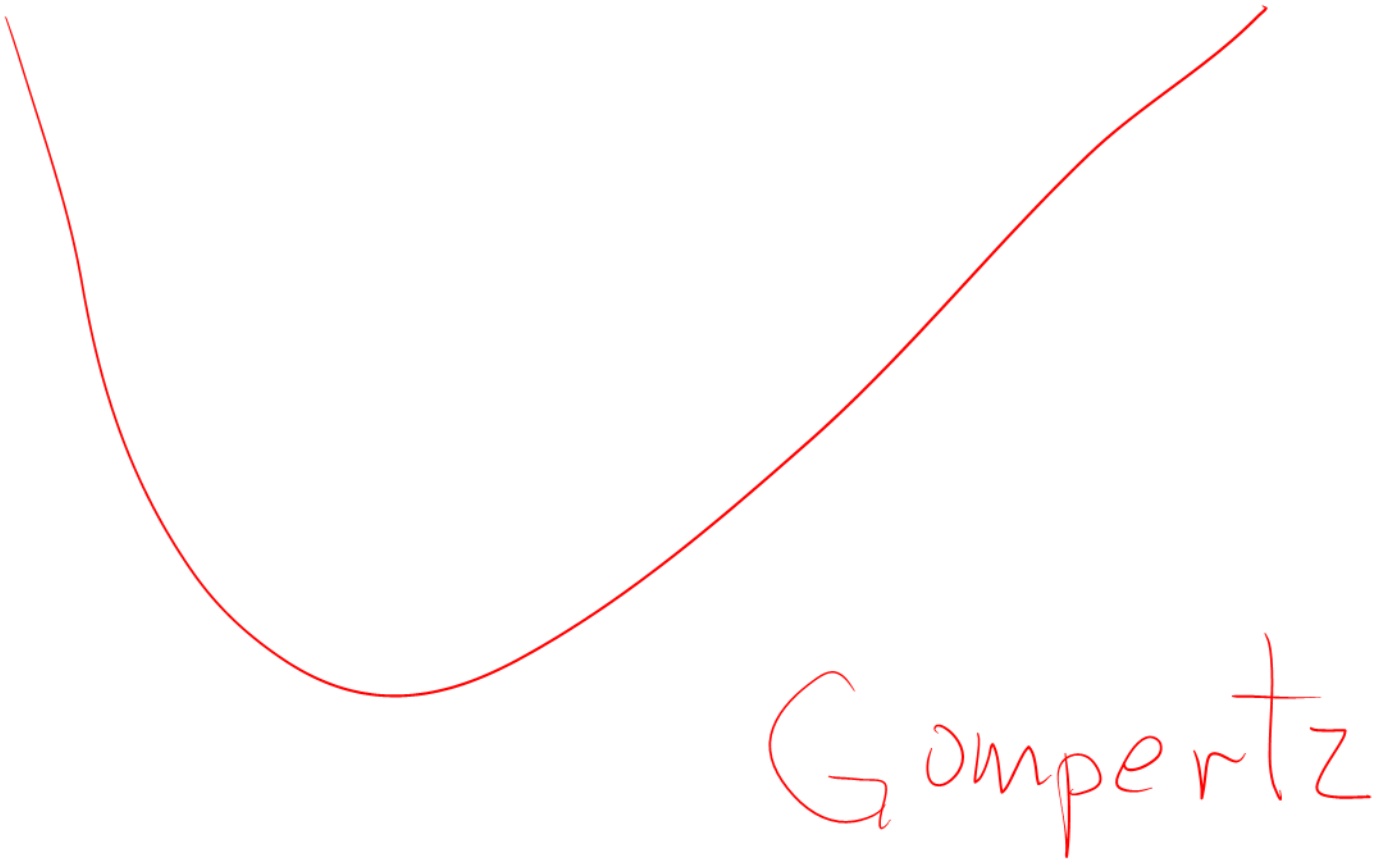


$$T_i = X_i - X_{i-1}$$

inter arrival times

T_1 is waiting time

$$T_i \sim Exp(\lambda)$$


Gompertz

$$F(x) = 1 - e^{-\lambda x}$$

$$P_r(x > a) = 1 - F(a)$$

$$= 1 - \left[1 - e^{-\lambda a}\right]$$

$$= e^{-\lambda a}$$

$$f(x \mid x > a) = \frac{\lambda e^{-\lambda x}}{e^{-\lambda a}} = \lambda e^{-\lambda(x-a)}$$

$\lambda = 4 \text{ hr}^{-1}$

dist of number of buses in 10 min interval

$Pois(4/6) = Pois(2/3)$

mean? $2/3$

sd? $\sqrt{2/3}$

dsn of waiting time for bus?

$\text{Exp}(\lambda \xi_2) = \text{Exp}(4\ hr^{-1})$

mean $1/\lambda = \frac{1}{4\ hr^{-1}} = 0.25\ hr : 15\ min$

sd $1/\lambda$

Amount of time until 3rd bus from now arrives?

$$\text{Gamma}(3, \lambda)$$

$$\text{mean} \quad \alpha/\lambda = \frac{3}{4 \text{ hr}^{-1}} = 0.75 \text{ hr}$$

$$\text{sd} = \sqrt{\alpha/\lambda^2} \quad \frac{\sqrt{3}}{4 \text{ hr}^{-1}} = \frac{\sqrt{3}}{4} \text{ hr}$$