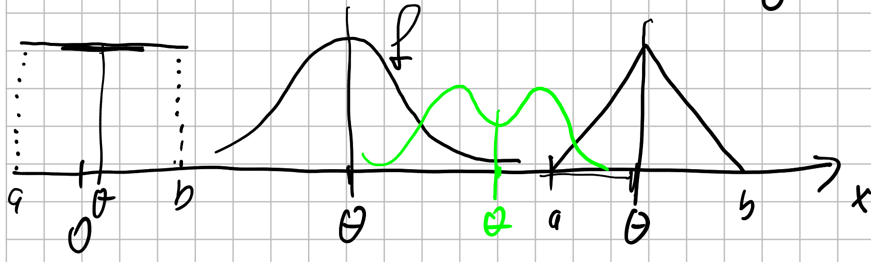
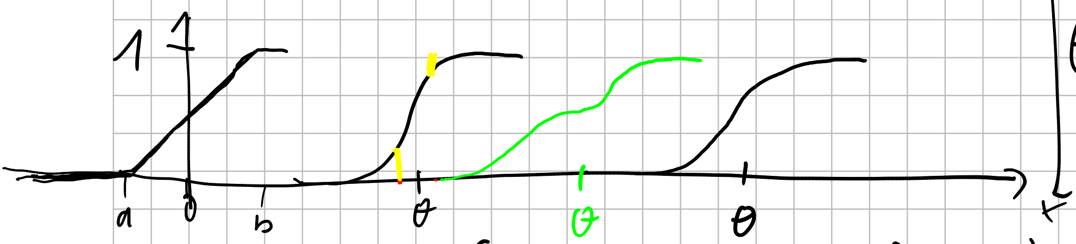
$X, X_1, \dots, X_n \overset{\text{uiv.}}{\sim} Q$ (absolut-) stetig : $\exists f: F(x) = \mathbb{P}(X \le x) = \int_{-\infty}^{x} f(u)\,du$

$\sim F$ stetig

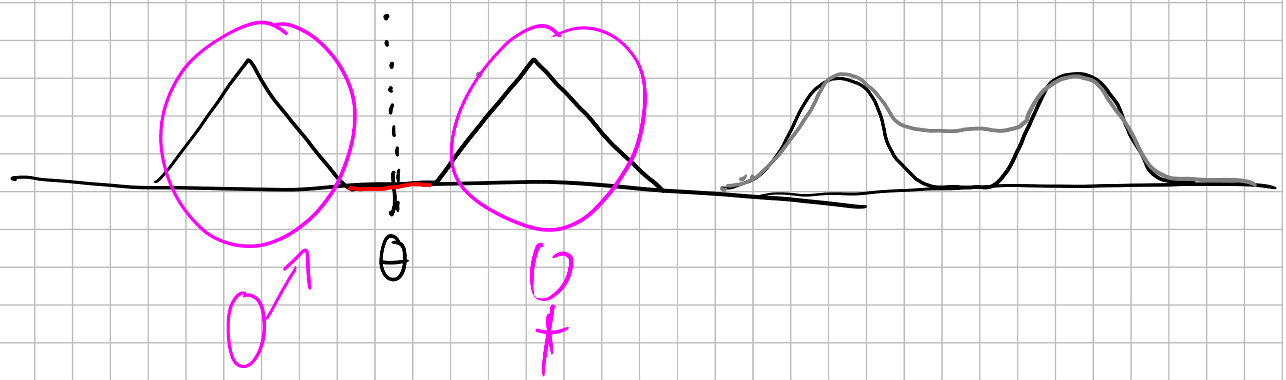
$F' = f$



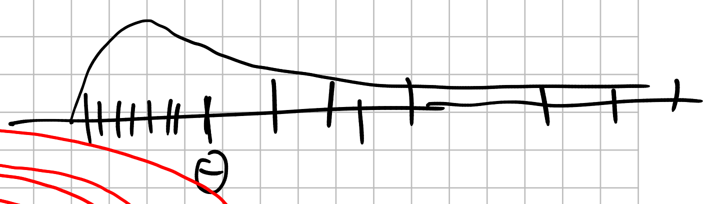


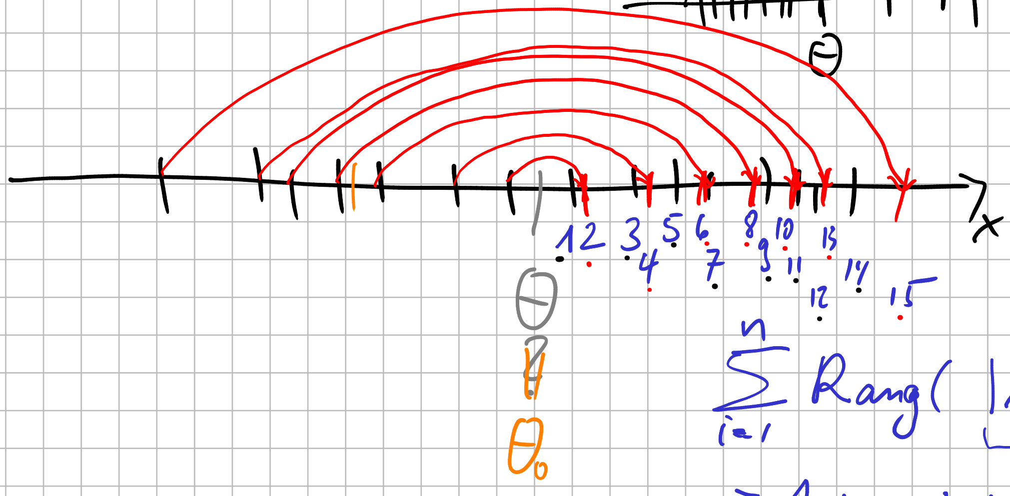
$\theta = 0$: $F(x) = 1 - F(-x)$

$F(x-\theta) = 1 - F(-(x-\theta))$



$H_0: \theta = \theta_0$

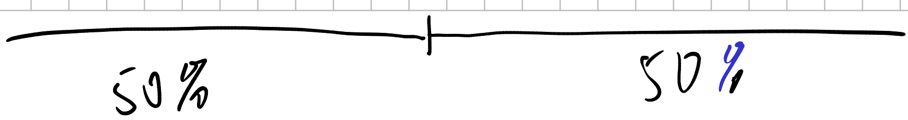




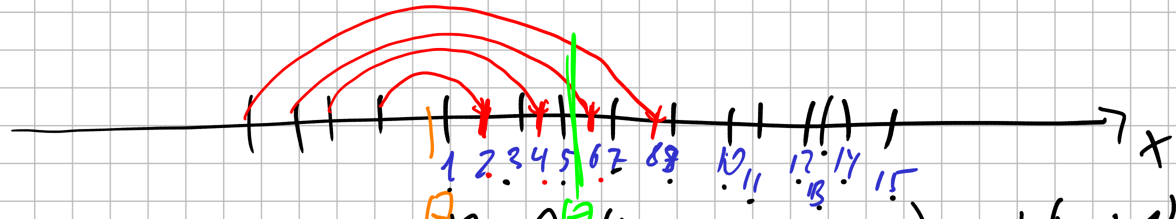
$$\sum_{i=1}^{n} \text{Rang}(\underbrace{|X_i - \theta_0|}) = \frac{n(n+1)}{2}$$

$$= 1 + \dots + n$$

$$W_n^- + W_n^+$$



$H_0: \Theta = \theta_0$



$$\sum_{i=1}^{n} Rg(|X_i - \theta_0|) = \frac{n(n+1)}{2}$$

W_n^+ $\qquad$ W_n^+

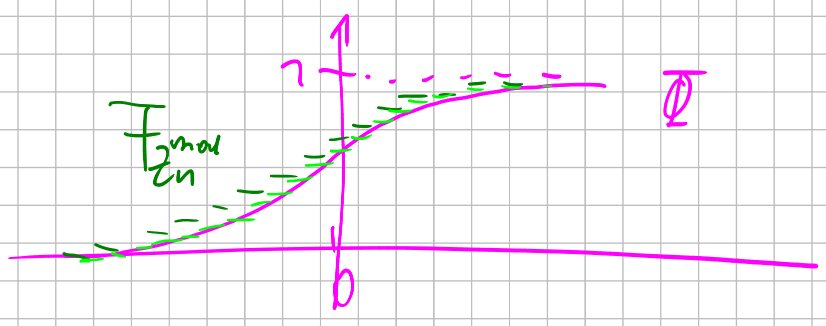
$$X_1, \dots, X_n \overset{uiv.}{\sim} Q$$

mit $\mu = \mathbb{E}[X_1] < \infty \quad (\mathbb{E}[|X_1|] < \infty)$

& $\sigma^2 = Var(X_i) < \infty \quad (\mathbb{E}[X_1^2] < \infty)$

$$\Longrightarrow \text{ZGWS}: Z_n := \frac{\bar{X}_n - \mathbb{E}[\bar{X}_n]}{\sqrt{\underbrace{Var(\bar{X}_n)}_{=\frac{\sigma^2}{n}}}} \overset{\cdot}{\sim} \mathcal{N}(0,1) \quad (n \to \infty)$$

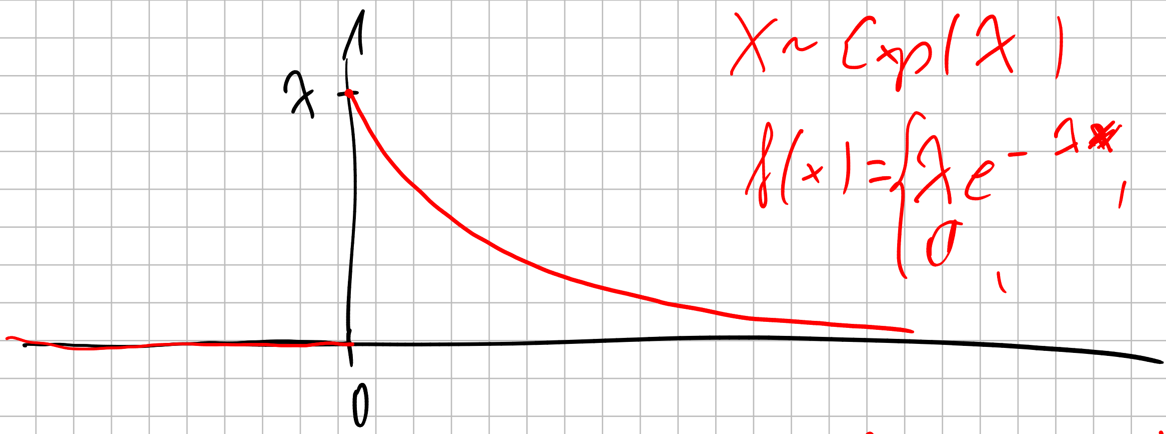
$$= \frac{\bar{X}_n - \mu}{\sigma/\sqrt{n}} \qquad \xrightarrow{\mathcal{L}}$$



$$\mathrm{Var}(X) = \mathbb{E}[(X - \mathbb{E}[X])^2]$$

$$= \mathbb{E}[X^2] - (\mathbb{E}[X])^2$$

$$\sum Ry(x_i)^2 \qquad \left(\frac{n(n+1)}{2}\right)^2$$



$X \sim Exp(\lambda)$

$$f(x) = \begin{cases} \lambda e^{-\lambda x}, & x \geq 0 \\ 0, & x < 0 \end{cases}$$

$Z \sim \mathcal{LN}(\mu, \sigma^2)$

$\iff Z = \exp(X)$, $X \sim \mathcal{N}(\mu, \sigma^2)$