T_{11}

d) $G: x_{min} < C$

$H_0: \xi \sim R(0,1)$

$\xi_{min} \sim (1 - F_0(x))^n$

$P(\vec{x}_n \in G \mid H_0) = \alpha$

$P(x_{min} < C \mid H_0) = \alpha$

$(1 - \underbrace{F_0(c)}_{=c})^n = \alpha$

$C = 1 - \sqrt[n]{\alpha}$

$G: x_{min} < 1 - \sqrt[n]{\alpha}$

$$W = P(\vec{x}_n \in G \mid H_1) = P(x_{min} < C \mid H_1)$$

$$H_1: \xi \sim p(x) = \frac{e}{e-1} e^{-x} \{(0,1)\}$$

$$F_1(x) = \int_0^x \frac{e}{e-1} e^{-t} dt = \frac{e}{e-1}(1 - e^{-x})$$

$$W = (1 - F_1(C))^n = \left(1 - \frac{e}{e-1}(1 - e^{-C})\right)^n =$$

$$= \left(1 - \frac{e}{e-1}\left(1 - e^{\sqrt[n]{\alpha} - 1}\right)\right)^n$$

$$\alpha_2 = 1 - W$$

$$W \xrightarrow[n \to \infty]{} 1 \ ?$$

$$e^{e^{\frac{1}{n}\ln\alpha}} = e^{1 + \frac{1}{n}\ln\alpha + o(\frac{1}{n})}$$

$$\left(1 - \frac{e}{e-1}\left(1 - e^{\frac{1}{n}\ln\alpha + o(\frac{1}{n})}\right)\right)^n =$$

$$= \left(1 - \frac{e}{e-1}\left(1 - \frac{1}{n}\ln\alpha + o(\tfrac{1}{n})\right)\right)^n =$$

$$= \left(\frac{-1}{e-1} + \frac{e}{e-1}\frac{1}{n}\ln\alpha + o(\tfrac{1}{n})\right)^n =$$

$$= \cancel{\left(\frac{-1}{e-1}\right)^n \left(1 + 4\right.} \quad \cancel{\left(\frac{-1}{e-1}\right)^n \left(1 - \right.}$$

$$\exists N_0 : \forall n \geq N_0 \hookrightarrow \left| \frac{-1}{e-1} - \frac{e}{e-1} \frac{1}{n} \ln d + o\left(\frac{1}{n}\right) \right| =$$

$$= \left| \frac{-1 - \frac{e}{n} |\ln d|}{e-1} + o\left(\frac{1}{n}\right) \right| < 1 \quad \Rightarrow$$

$$\Rightarrow \forall \varepsilon > 0 \quad \exists N : \forall n \geq N \hookrightarrow$$

$$\hookrightarrow \left(\frac{-1 - \frac{e}{n} |\ln d|}{e-1} + o\left(\frac{1}{n}\right) \right)^n < \varepsilon \Rightarrow \text{не сост.}$$