(T13)

Египет

$n = 139$

$\xi_1 \sim N(a, \varphi_1^2)$

$\xi_2 \sim N(c, \varphi_2^2)$

$S_{1n} = 5,722$

$S_{2n} = 4,612$

Европа

$m = 1000$

$\eta_1 \sim N(b, \psi_1^2)$

$\eta_2 \sim N(d, \psi_2^2)$

$S_{1m} = 6,161$

$S_{2m} = 5,055$

$H_0: \quad \varphi_1^2 = \psi_1^2$

$\qquad \varphi_2^2 = \psi_2^2$

$H_1: \quad \varphi_1^2 \neq \psi_1^2$

$\qquad \varphi_2^2 \neq \psi_2^2$

$$\dfrac{\dfrac{S_n^2}{\varphi^2}}{\dfrac{S_m^2}{\psi^2}} \sim F(n-1, m-1) = F(138, 999)$$

Если H_0 верна, то

$$\Delta = \dfrac{S_n^2}{S_m^2} \sim F(138, 999)$$

$G: |\Delta| \geq C$

$P(|\Delta| \geq C) = \alpha$, $\qquad \alpha = 0,05$

$P(\Delta \leq C_1) + P(\Delta \geq C_2) = \alpha$

$C_1 = F_{\alpha/2}(138, 999) = 0,767$

$C_2 = F_{1-\alpha/2}(138, 999) = 1,272$

$\dfrac{S_{1n}^2}{S_{1m}^2} = 0,86 \qquad\qquad \dfrac{S_{2n}^2}{S_{2m}^2} = 0,83 \qquad \Rightarrow \text{вет}$

осн. $\qquad$ от B. $\qquad$ H_0

$W(\varphi^2, \psi^2) = W\left(\dfrac{\psi^2}{\varphi^2}\right) = P\left(\Delta \cdot \dfrac{\psi^2}{\varphi^2} \leq \underset{\alpha_1}{0,767 \cdot \dfrac{\psi^2}{\varphi^2}}\right) +$

$+ P\left(\Delta \cdot \dfrac{\psi^2}{\varphi^2} \geq 1,272 \dfrac{\psi^2}{\varphi^2}\right) = \int\limits_{-\infty}^{a_1} f(t)\,dt + \int\limits_{a_2}^{\infty} f(t)\,dt$

$a_1 = 0,767 \cdot \dfrac{\psi^2}{\varphi^2} \qquad\qquad a_2 = 1,272 \cdot \dfrac{\psi^2}{\varphi^2}$