Т.13

$\xi \sim N(a_\xi, \sigma_\xi^2) \qquad n = 139$

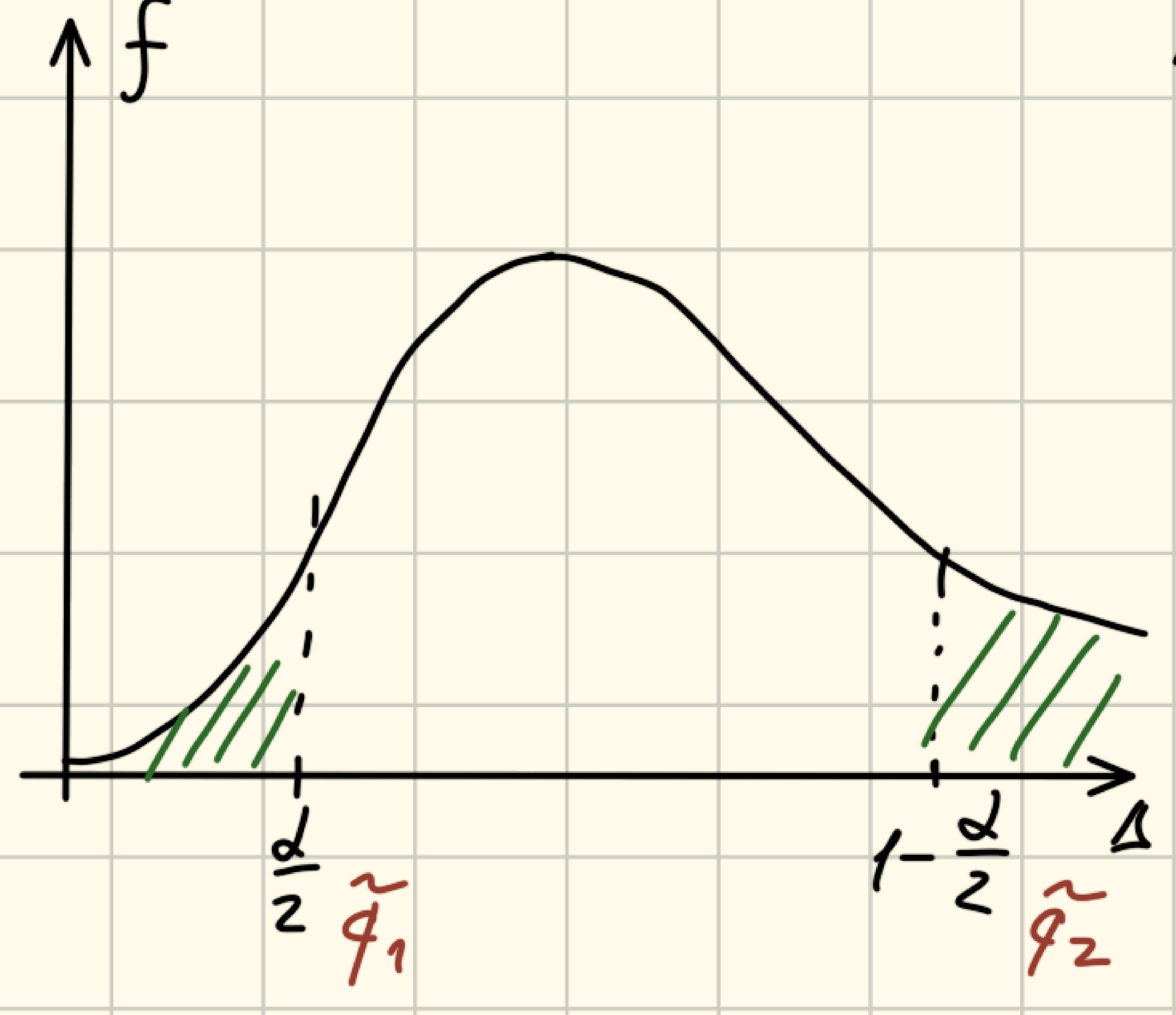
$\eta \sim N(a_\eta, \sigma_\eta^2) \qquad m = 1000$

Длина: $S_\xi^2 = 5{,}722$; $S_\eta^2 = 6{,}161$ | ширина: $S_\xi^2 = 4{,}612$, $S_\eta^2 = 5{,}055$

$H_0: \sigma_\xi = \sigma_\eta$, т.е. $\dfrac{S_\xi^2}{S_\eta^2} \sim F(n-1, m-1)$

$H_1: \dfrac{\sigma_\xi}{\sigma_\eta} = \delta \neq 1$, т.е. $\dfrac{S_\xi^2}{\delta^2 \cdot S_\eta^2} \sim F(n-1, m-1)$

тогда



$$\Delta = \left(\frac{S_\xi}{S_\eta}\right)^2$$

$$G: \left[\begin{array}{l} \Delta \geq \tilde{q}_2 \\ \Delta \leq \tilde{q}_1 \end{array}\right.$$

имеем:

$$\alpha_1 = P\left(\left[\begin{array}{l} \Delta \geq \tilde{q}_2 \\ \Delta \leq \tilde{q}_1 \end{array}\right. \middle| H_0\right) = \alpha$$

т.е. $\Delta \sim \alpha^2 \cdot F(n-1, m-1)$ – функция распр. Фишера

$$W = P\left(\left[\begin{array}{l} \Delta \geq \tilde{q}_2 \\ \Delta \leq \tilde{q}_1 \end{array}\right. \middle| H_1\right) = \hat{f}\left(\tilde{q}_1/\alpha^2\right) - 1 - \hat{f}\left(\tilde{q}_2/\alpha^2\right)$$

где $\hat{f}(x) = f(n, m, x)$ – плотность распр. Фишера

Из Python:

$\tilde{q}_1/\alpha^2 \approx 0{,}77$

$\tilde{q}_2/\alpha^2 \approx 1{,}27$