(Т14) $\xi \sim \mathcal{N}(a, \sigma_x^2)$, $\sigma_x^2 = 2$ – независ.

$\eta \sim \mathcal{N}(b, \sigma_y^2)$, $\sigma_y^2 = 1$

$x = \{-1,11; -6,10; 2,42\}$

$y = \{-2,29; -2,91\}$

$H_0: a = b$ $H_1: a > b$

Т. Фишера:

$\frac{\bar{x} - a}{\sigma_x}\sqrt{n} \sim \mathcal{N}(0,1)$ $\frac{\bar{y} - b}{\sigma_y}\sqrt{m} \sim \mathcal{N}(0,1)$

$\Delta = \bar{x} - a - (\bar{y} - b) \sim \mathcal{N}\left(0, \frac{\sigma_x^2}{n} + \frac{\sigma_y^2}{m}\right)$

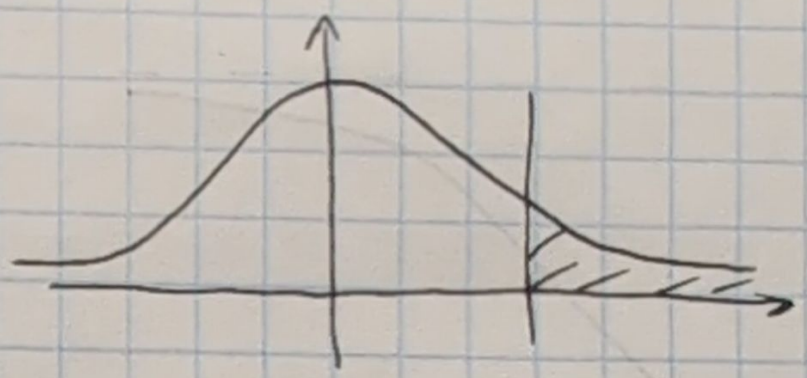
$\frac{\bar{x} - \bar{y} - (a-b)}{\sqrt{\frac{\sigma_x^2}{n} + \frac{\sigma_y^2}{m}}} \sim \mathcal{N}(0,1)$

Если H_0 верна, $\nabla \Delta^5 \frac{\bar{x} - \bar{y}}{\sqrt{\frac{\sigma_x^2}{n} + \frac{\sigma_y^2}{m}}} \sim \mathcal{N}(0,1)$

~~G: $|\Delta| \geq C$~~

~~$P(|\Delta| \geq C \mid H_0) = \alpha$~~

~~$2P(\Delta \geq C \mid H_0) = \alpha$~~



$\alpha = 0{,}05$

G: $\Delta \geq C$

$P(\Delta \geq C \mid H_0) = \alpha$

$C = u_{1-\alpha} = 1{,}645$

G: $\Delta \geq 1{,}645$

$\hat{\Delta} = 0{,}929 \Rightarrow$ нет осн. отв. H_0

$\frac{\bar{x} - \bar{y}}{\sigma\sqrt{}} \geq 1{,}645$ $\quad \hat{\sigma} = \sqrt{\frac{\hat{\sigma}_x^2}{n} + \frac{\hat{\sigma}_y^2}{m}}$

$\bar{x} - \bar{y} \geq 1{,}645 \cdot \hat{\sigma}$

$W(a, b) = W(a - b) =$ ~~$P(\bar{x} - \bar{y} \in G \mid H_1)$~~ $=$

$= P(\bar{x} - \bar{y} \geq 1{,}645\hat{\sigma} \mid H_1) = \int_C^{\infty} \frac{1}{\sqrt{2\pi}} \cdot e^{-\frac{x^2}{2}} dx$

$C = \frac{1{,}645\hat{\sigma} - (a - b)}{\sigma} = 1{,}645 - \frac{a - b}{\sqrt{\frac{7}{6}}}$