T_{13}

$a, \sigma_x^2 = 2$ $\quad$ $\vec{x}_n = \{-1,11; -6,10; \ 2,42\}$

$b, \sigma_y^2 = 1$ $\quad$ $\vec{y}_n = \{-2,29; -2,91\}$

$H_0 : a = b$

$H_1 : a > b, \ a < b, \ a \neq b$

$$H_0 : \Delta = \frac{\bar{x} - \bar{y}}{\sqrt{\frac{\sigma_x^2}{n} + \frac{\sigma_y^2}{m}}} \sim N(0,1)$$

$$\bar{x} = \frac{1}{n} \sum x_i = -1,59$$

$$\bar{y} = \frac{1}{m} \sum y_i = -2,6$$

$$\tilde{\Delta} = 0,928906$$

1) $a > b$

$$p\text{-value} = P(\Delta > \tilde{\Delta} \mid H_0) = \int_{0,92}^{+\infty} q_{N(0,1)} \, dx = 0,17 > \alpha = 0,05$$

нет оснований отвергнуть H_0

2) $a < b$

$$\text{p-value} = P(\Delta < \tilde{\Delta} \mid H_0) = \int_{-\infty}^{\tilde{\Delta}} q_{N(0,1)}\, dx = 0,82 > \alpha$$

нет оснований отвергнуть H_0

3) $a \neq b$

$$\text{p-value} = P(|\Delta| > \tilde{\Delta} \mid H_0) = P(\Delta < -\tilde{\Delta} \mid H_0) + P(\Delta > \tilde{\Delta} \mid H_0) =$$

$$= 2\int_{\tilde{\Delta}}^{+\infty} q_{N(0,1)}\, dx = 0,35 > \alpha$$

нет оснований отвергнуть H_0