

№1.

$$x_1, \dots, x_n : N(a, 1)$$

$$y_1, \dots, y_m : N(b, 2)$$

~~из~~ g_a g_b $3a-2b$

$$\sqrt{n}(\bar{x} - a) \rightarrow N(0, 1) \quad \sqrt{m}(\bar{y} - b) \rightarrow N(0, 2)$$

$$(\bar{x} - a) \rightarrow N(0, \frac{1}{n}) \quad (\bar{y} - b) \rightarrow N(0, 2/m)$$

$$3\bar{x} - 3a \rightarrow N(0, \frac{9}{n}) \quad 2\bar{y} - 2b \rightarrow N(0, \frac{32}{m})$$

отсюда

$$3\bar{x} - 3a - (2\bar{y} - 2b) \rightarrow N(0, \frac{9}{n} + \frac{32}{m})$$

$$3\bar{x} - 2\bar{y} - (3a - 2b) \rightarrow N(0, \frac{9m - 32n}{nm})$$

$$\sqrt{\frac{nm}{9m - 32n}} (3\bar{x} - 2\bar{y} - (3a - 2b)) \rightarrow N(0, 1)$$

$$P(\dots \leq x) = \Phi(x)$$

$$x_{\alpha} : \Phi(x_{\alpha}) = 1 - \alpha/2$$

$$P(-x_{\alpha} \leq \dots \leq x_{\alpha}) = 1 - \alpha$$

$$P\left(-x_{\alpha} \sqrt{\frac{9m - 32n}{nm}} - 3\bar{x} + 2\bar{y} \leq -(3a - 2b) \leq x_{\alpha} \sqrt{\frac{9m - 32n}{nm}} - 3\bar{x} + 2\bar{y}\right)$$

$$P\left(\kappa_d \sqrt{\frac{9m-32n}{nm}} + 3\bar{x} - 2\bar{y} \geq 3a - 2b \geq -\kappa_d \sqrt{\frac{9m-32n}{nm}} + 3\bar{x} - 2\bar{y}\right)$$

\Rightarrow

$$\left[-\kappa_d \sqrt{\frac{9m-32n}{nm}} + 3\bar{x} - 2\bar{y}; \kappa_d \sqrt{\frac{9m-32n}{nm}} + 3\bar{x} - 2\bar{y}\right] - DU$$

где θ уровень доверия $1-\alpha$