

Рассеянное задание.
В-14.

1. Тема - гипергеометрия, $\alpha = ?$, $\alpha = 1$, $\beta = 2$

$$1) a_1 \frac{2}{2+\beta} = \bar{E}(X) = \frac{1}{1+2} = \frac{1}{3}$$

$$\delta_1 D(X) = \frac{2\beta}{(\alpha+\beta)^2(\alpha+\beta+1)} = \frac{2}{9+4} = \frac{1}{18}$$

$$2) f(x) = \frac{\Gamma(\alpha+\beta)}{\Gamma(\alpha)\Gamma(\beta)} x^{\alpha-1} (1-x)^{\beta-1} \quad x \in [0; 1]$$

Меню моментов.

$$f_m = \frac{\Gamma(\beta)}{\Gamma(\alpha)\Gamma(\beta)} (1-x) = \frac{x(1-x)}{\Gamma(\alpha)\Gamma(\beta)}$$

$$M_1 = \frac{-x^2(2\alpha-3\beta)}{3\alpha^2} = a_1$$

$$\cancel{M_2 = \frac{-x^3(3\alpha-4\beta)}{6\alpha^2}}$$

$$3d^2 a_1 = -2x^3 + 3\lambda x^2$$

$$3d^2 a_1 - 3\lambda x^2 = -2x^3$$

$$d^2 a_1 - dx^2 + \frac{x^4}{4} = -\frac{2x^3}{3} + \frac{x^4}{4}$$

$$\left(\sqrt{a} (1-x^2) + dx^2 \right) = x^4 - \frac{2x^3}{3}$$

$$\left(\sqrt{a} (1 - \frac{x^2}{2}) \right) = -\frac{2x^3}{3} + \frac{x^4}{4}$$

$$1 = \frac{x^2}{2} + \sqrt{\frac{x^4}{4} - \frac{2x^3}{3}}$$

$$3) \sqrt{\frac{(x-2)}{x^2 B(1,2)}} = \sqrt{\frac{(x-2)}{95x^2}} = -\frac{1}{\sqrt{2}x\sqrt{x-2}}$$

12.1
Two Petros, maximum number.

$$\bar{X} = \frac{1}{n} \sum_{i=1}^n X_i = \frac{1}{50} (-168) = -3,36$$

$$S^2 = \frac{1}{n} \sum_{i=1}^n (X_i - \bar{X})^2 = 0,14544$$

$$S_0^2 = 0,1484081633$$

$$\bar{X}_{(1)} = 2,3$$

$$\bar{X}_{(n)} = 4,4$$

$$R = 4,4 - 2,3 = 2,1$$

$$\text{Med} = 3,4$$

2) X_i 2,3 2,9 3 3,1 3,2 3,3 3,4 3,5 3,6 3,7

n_i 1 1 6 4 5 2 9 6 3 3

3,8 3,9 4 4,1 4,2 4,4

4 2 1 1 1 1

$$F_{50}(x \leq 2,3) = 0$$

$$F_{50}(2,3 < x \leq 2,9) = \frac{1}{50} = 0,02$$

$$F_{50}(2,9 < x \leq 3) = \frac{2}{50} = 0,04$$

$$F_{50}(3 < x \leq 3,1) = \frac{8}{50} = 0,16$$

$$F_{50}(3,1 < x \leq 3,2) = \frac{12}{50} = 0,24$$

$$F(3,2 \leq x \leq 3,3) = \frac{12}{50} = 0,24$$

$$F(3,3 \leq x \leq 3,4) = \frac{10}{50} = 0,2$$

$$F(3,4 \leq x \leq 3,5) = \frac{28}{50} = 0,56$$

$$F(3,5 \leq x \leq 3,6) = \frac{34}{50} = 0,68$$

$$F(3,6 \leq x \leq 3,7) = \frac{12}{50} = 0,24$$

$$F = \frac{40}{50} = 0,8$$

$$F = \frac{44}{50} = 0,88$$

$$F = \frac{46}{50} = 0,92$$

$$F = \frac{48}{50} = 0,96$$

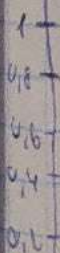
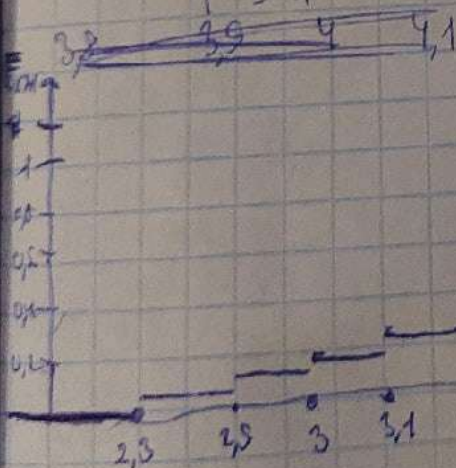
$$F = \frac{48}{50} = 0,96$$

$$F = 0,98$$

$$F = 1$$

33

3

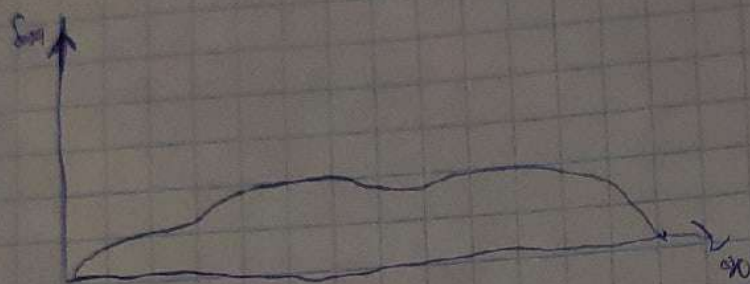


$$W_{2,3} = 2,3 \quad h_{1,3} = \frac{1}{50} = 0,02$$

$$W_{2,3} = 0,6 \quad h_{2,3} = \frac{1}{50} = 0,02$$

$$W_3 = 0,1 \quad h_3 = \frac{6}{50} = 0,12$$

$$p_n(x) = \frac{1}{n h_n} \sum_{i=1}^n g\left(\frac{x - x_i}{h_n}\right)$$



$$3) \text{ if } y = 0,99 \quad b_y = 2,58$$

$$3,36 - 2,58 \cdot \frac{0,381}{550} < M(x) < 3,36 + 2,58 \cdot \frac{0,381}{550}$$

$$3,22 < M(x) < 3,499$$

$$2) \quad V_1 = 22,99 \quad V_2 = 29,49$$

$$22,99 < \frac{49 \cdot 0,145}{0^2} < 29,49$$

$$0,089 < \sigma^2 < 0,25$$

$$4) \quad n_i^0 = \frac{n h}{5} \varphi(u_i) \quad u_i = \frac{x_i - \bar{x}}{5}$$

$$\chi^2_{\text{табл.}} = 24,552$$

$$\chi^2_{\text{нпм}} \quad \text{нпм } \alpha = 0,05 = 62,50$$

$$\chi^2_{\text{табл.}} < \chi^2_{\text{нпм}} \Rightarrow \text{Гипотеза не отвергается}$$

n 3,

iris virginica	Setosa	versicolour	virginica
4.9	5.2	5.8	5.9
5.6	5.8	6	6.1
6.5	6.2	6.8	6.9
		7.1	7.2
			7.3

(4, 5)

(5, 6)

(6, 7)

(4, 5)

(5, 6)

(6, 7)

(7, 8)

$$(4-1) \cdot (3-1) = 6$$

$$\chi^2_{\text{табл}} = 88.5508$$

$$\chi^2_{\text{кр}} = 12.6 \quad \text{при } \alpha = 0.05$$

$\chi^2_{\text{табл}} > \chi^2_{\text{кр}}$ - гипотеза отвергается

$$2.1. \text{cov}(X, Y) = M(XY) - M(X)M(Y)$$

$$M(XY) = \text{cov}(X, Y) = \frac{1}{n} \sum_{i=1}^n (x_i - \bar{x})(y_i - \bar{y}) =$$

$$\bar{x} = 6.588 \quad \bar{y} = 5.552$$

$$\text{cov}(X, Y) = 0.297224$$

$$r_{xy} = \frac{\text{cov}(X, Y)}{\sigma_x \sigma_y} = \frac{0.297224}{0.629489 \cdot 1.18124} = 0.403$$

$$2. \bar{T}_{\text{набл}} = \frac{0,403 \sqrt{48}}{\sqrt{1-0,162403}} = 3,05$$

$$\bar{T}_{\text{те}} = 1,96 \quad \text{при } \gamma = 0,95$$

$\bar{T}_{\text{набл}} > \bar{T}_{\text{те}} \Rightarrow \text{многократно превышает}$

3)

$$4. F(p, b) = \sum (p x_k + b - y_k)^2$$

$$p = \frac{n \sum x_k y_k - \sum x_k \cdot \sum y_k}{n \sum x_k^2 - (\sum x_k)^2}$$

$$p = \frac{50 \cdot 1843,69 - 329,4 \cdot 222,6}{50 \cdot 2189,9 - 108504} = 0,25$$

$$b = \frac{\sum x_k^2 \sum y_k - \sum x_k \sum x_k y_k}{n \sum x_k^2 - (\sum x_k)^2} =$$

$$= \frac{2189,9 \cdot 222,6 - 329,4 \cdot 1843,69}{50 \cdot 2189,9 - 108504} = 0,61$$

$$Y = 0,25 X + 0,61$$

$$2. R = r_{xy}^2 = 0,403^2 = 0,162403$$

$$3. \bar{r} = \frac{0,162403}{1-0,162403} \cdot 50 - 2 = 9,307$$

$$F_{\text{кр}} = 1,2 \quad \text{при } 2 \text{ ст. св.}$$

$\bar{r}_{\text{набл}} > \bar{r}_{\text{кр}} \Rightarrow \text{можно заключить}$