İktisat- İstatistik 2 Vize Soru Çözümleri

1)

a)

$$P\left(Z > \frac{78-\mu}{10}\right) = 0{,}05$$

$$Z_{a/2} = 1{,}65$$

$$\frac{78-\mu}{10} = 1{,}65$$

$$\mu = 61{,}5$$

b)

$$P\left(Z < \frac{55-61{,}5}{10}\right) = P(Z < -0{,}65) = 0{,}5 - 0{,}2422 = 0{,}2578$$

2)

$$\bar{x} = \frac{16+15+18+19+\cdots+14+22}{11} = 18$$

$X_i - \bar{X}$	$(X_i - \bar{X})^2$
16-18=-2	4
15-18=-3	9
18-18=0	0
19-18=1	1
17-18=-1	1
21-18=3	9
23-18=5	25
16-18=-2	4
17-18=-1	1
14-18=-4	16
22-18=4	16
$\sum(X_i - \bar{X}) = 0$	$\sum(X_i - \bar{X})^2 = 86$

$$s = \sqrt{\frac{\sum(X_i - \bar{X})^2}{n-1}} = \sqrt{\frac{86}{11-1}} = 2{,}933$$

$$t_{0{,}025;11-1} = 2{,}228$$

$$18 - 2{,}228 \times \frac{2{,}933}{\sqrt{11}} \leq \mu \leq 18 + 2{,}228 \times \frac{2{,}933}{\sqrt{11}}$$

$$16{,}03 < \mu < 19{,}97$$

b) Hata büyüklüğü= $2{,}228 \times \frac{2{,}933}{\sqrt{11}}$=1,97

c)

$$n = \left(\frac{Z_{\frac{a}{2}}\, s}{e}\right)^2$$

$$z_{a/2} = 1{,}96$$

$$n = \left(\frac{1{,}96 \times 2{,}933}{0{,}2}\right)^2 \cong 826$$

Ya da

$$n = \left(\frac{2.228 \times 2{,}933}{0{,}2}\right)^2 \cong 1067$$

3)

$$\hat{p}_1 = \frac{36}{72} = 0{,}5$$

$$\hat{p}_2 = \frac{31}{50} = 0{,}62$$

$$(\hat{p}_1 - \hat{p}_2) - Z_{\frac{a}{2}}\sqrt{\frac{\hat{p}_1\hat{q}_1}{n_1} + \frac{\hat{p}_2\hat{q}_2}{n_2}} \leq p_1 - p_2 \leq (\hat{p}_1 - \hat{p}_2) + Z_{\frac{a}{2}}\sqrt{\frac{\hat{p}_1\hat{q}_1}{n_1} + \frac{\hat{p}_2\hat{q}_2}{n_2}}$$

$$(0{,}50 - 0{,}62) - 1{,}96 \times \sqrt{\frac{0{,}50 \times 0{,}50}{72} + \frac{0{,}62 \times 0{,}38}{50}} \leq p_1 - p_2 \leq (0{,}50 - 0{,}62) + 1{,}96 \times \sqrt{\frac{0{,}50 \times 0{,}50}{72} + \frac{0{,}62 \times 0{,}38}{50}}$$

$$-0{,}2973 \leq p_1 - p_2 \leq 0.0573$$

Güven aralığı sıfır değerini içerdiğinden dolayı iki grup arasında anlamlı bir fark olmadığı sonucuna ulaşılır.