



班级: 计01

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79. 由定理 5-8 知, 统计量满足 F -分布. 取 $m=4, n=8, \sigma_1^2=\sigma_2^2$, 有:

$$F = \frac{m S_1^2 / (m-1) \sigma_1^2}{n S_2^2 / (n-1) \sigma_2^2} = \frac{4 S_1^2 / (3 \sigma_1^2)}{8 S_2^2 / (7 \sigma_1^2)} = \frac{7}{6} \cdot \frac{S_1^2}{S_2^2}$$

此分布服从 $\nu_1 = m-1 = 3, \nu_2 = n-1 = 7$, 又 $S_1^2 > 1.5 S_2^2$, 故 $F > \frac{7}{6} = 1.175$

由于 $F = 1.75 < 4.35 = F_{0.05}$, 故所求概率大于 0.05

82. (a) 799 (b) 1000 (c) 949.5 (d) 1099.5 ~ 1199.5 (e) 100 (f) 76

(g) $\frac{62}{400} = 15.5\%$ (h) $\frac{14+46+58}{400} = 29\%$ (i) $\frac{48+22+6}{400} = 17\%$ (j) $\frac{58+76+62+68}{400} = 78\%$

87.

Diameter	Frequency
0.723 - 0.727	5
0.728 - 0.732	14
0.733 - 0.737	24
0.738 - 0.742	13
0.743 - 0.747	4
TOTAL	60

107. (a) mean = 146.8, standard deviation = 12.89

(b) 取 6 个区间, 有:

那么, $\bar{x} = \frac{\sum f x}{n} = \frac{5860}{40} = 146.5$

Diameter	frequency
(122.5) 118 - 127	3
(132.5) 128 - 137	6
(142.5) 138 - 147	14
(152.5) 148 - 157	9
(162.5) 158 - 167	5
(172.5) 168 - 177	3
TOTAL	40

$$S^2 = \frac{\sum f(x-\bar{x})^2}{n} = \frac{6760}{40} = 169$$

则 $S = \sqrt{169} = 13$

(c) 12.89 ~ 13, 这种误差是可以接受且正常的. 原因在于同一个区间内数据分布是离散的.