assignment 7

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Outline

example:8.24

- we roll a die 300 times and we observe that f_i shows k_i= 55,43,44 ,61,40,57 times. Test the hypothesis that the die is fair with α=0.05. by using pearsons test statistics.

solution

In this problem ,$p_{Oi} = 1/6, m = 6$,$np_{oi} = 50$, by using pearsons test equation.

$$q = \sum_{i=1}^{m} \frac{(k_i - np_{oi})^2}{np_{oi}} \tag{1}$$

by substituting the above given values we get,

$$q = \sum_{i=1}^{m} \frac{(k_i - 50)^2}{50} \tag{2}$$

$$q = \frac{(5)^2 + (-7)^2 + (-6)^2 + (11)^2 + (-10)^2 + (7)^2}{50} \tag{3}$$

$$q = 7.6 \tag{4}$$

$$\chi^2_{0.95} = 11.07 \tag{5}$$

since from above eqns we get,
$\chi^2_{0.95} = 11.07 > (q = 7.6)$, by that we can say fair die hypotheis is accepted.