

1. Let X_1, X_2, \dots, X_n be a random sample of size n from the negative exponential distribution having probability density function

$$\frac{1}{\theta} e^{-\frac{x}{\theta}} \quad \text{for } x > 0.$$

Obtain the likelihood ratio test for testing $H_0 : \theta = \theta_0$ versus $H_1 : \theta \neq \theta_0$.

2. Let X_1, X_2, \dots, X_n be a random sample of size n from the Bernoulli distribution where

$$p = P[X_1 = 1] = 1 - P[X_1 = 0]$$

- (a) Obtain the likelihood ratio test for testing $H_0 : p = p_0$ versus $H_1 : p \neq p_0$.
- (b) With $\alpha = .03$, use the test in Part (a) to test $H_0 : p = .6$ versus $H_1 : p \neq .6$ when 37 out of $n = 81$ drivers report receiving a ticket for a parking violation last year.

The remaining problems are from the book.

3. Exercise 26 page 337 (Also calculate the P-value)
4. Exercise 22 page 337 (Also calculate the P-value)
5. Exercise 44 (b) and (d) page 350