

Name:

1) Problem 10.19

2) Problem 10.21

3) Problem 10.24

4) Problem 10.70a

5) Suppose X_1, \dots, X_m is a random sample from an exponential distribution with parameter θ_1 and Y_1, \dots, Y_n is a random sample from an exponential distribution with parameter θ_2 .

a) Show that the maximum likelihood estimates of θ_1 and θ_2 are

$$\hat{\theta}_1 = \frac{\sum_{i=1}^m x_i}{m} \quad \text{and} \quad \hat{\theta}_2 = \frac{\sum_{i=1}^n y_i}{n}$$

b) Find the likelihood ratio criterion for testing

$$H_0 : \theta_1 = \theta_2 \quad \text{vs} \quad H_a : \theta_1 \neq \theta_2$$