

HW 12

For Problems 1-2, suppose RV X has one of the following distributions (either H_0 or H_A):

X	H_0	H_A
x_1	0.2	0.1
x_2	0.3	0.4
x_3	0.3	0.1
x_4	0.2	0.4

Problem 1 (9.4) Compute the likelihood ratio, Λ , for each possible value of X and order the x_i according to Λ .

Problem 2 (9.4) What is the likelihood ratio test rejection rule for H_0 vs H_A at level $\alpha = 0.2$? What is the test rejection rule at level $\alpha = 0.5$?

Problem 3 (9.5) Determine if each of the following statements about (frequentist) hypothesis testing is true or false. Give a brief explanation as to why. Answers without an explanation will not receive full credit.

- (a) A type I error occurs when the test statistic falls in the rejection region of the test.
- (b) A type II error is more serious than a type I error.
- (c) The power of a test is determined by the null distribution of the test statistic.
- (d) The likelihood ratio is a random variable.