

1. Let X_1, X_2, \dots, X_n be i.i.d. $\text{Poisson}(\lambda)$.
 - (a) Find the likelihood ratio for the testing $H_0 : \lambda = \lambda_0$ versus $H_1 : \lambda = \lambda_1$, where $\lambda_1 > \lambda_0$.
 - (b) Determine a rejection region for a test at level α .
 - (c) Show that the test is uniformly most powerful for testing $H_0 : \lambda = \lambda_0$ versus $H_1 : \lambda > \lambda_0$.

2. Chapter 10: Problem 14.

3. Chapter 10: Problem 15.

4. Problem 11: (a), and first part of (b) (consider Bonferroni method only).

5. The following table gives the number of deaths due to accidental falls for each month during 1970. Is there any evidence for a departure from a uniformity in the rate over time?

Month	Jan.	Feb.	Mar.	Apr.	May	June
Number of Deaths	1668	1407	1370	1309	1341	1338
Month	July	Aug.	Sept.	Oct.	Nov.	Dec.
Number of Deaths	1406	1446	1332	1363	1410	1526

6. An English naturalist collected data on the lengths of cuckoo eggs, measuring to the nearest .5mm. Examine the normality of this distribution by
 - (a) constructing a histogram and superposing a normal density
 - (b) Do a chi-square test.

Length	18.5	19	19.5	20	20.5	21	21.5	22	22.5
Frequency	0	1	3	33	39	156	152	392	288
Length	23	23.5	24	24.5	25	25.5	26	26.5	
Frequency	286	100	86	21	12	2	0	1	