

Homework 3
Math 181B, UCSD, Spring 2018
Due on Thursday, 26th April in class

Complete the following questions of the textbook from Larsen & Marx:

(5 th edition)		
Section	Page	Questions
10.5	528-529	2, 6, 7

In addition, complete the following exercise:

Exercise

A Chinese group of ornithologists studies the duck population of the Yellow River. Every season, they capture ducks, measure a certain number of parameters, and then eat all the ducks they captured to celebrate the end of the study. The following table gives the weights (in kg) of the captured ducks of two consecutive years (called 1 and 2).

Year 1	2.22	2.16	2.49	2.11	2.17	2.13	2.06	2.21	2.20	2.47	2.20	2.08
Year 2	2.52	2.31	2.11	2.73	2.32	2.38	2.30	2.41	2.40	2.15		

Duck survey (Yellow River)

On the other hand, an Italian group of ornithologists studies the goose population of the Po River. Every season, they capture geese, measure a certain number of parameters, and then set the geese free after marking them with an identification ring. From one year to another, they catch again the same birds they caught previously. The following table gives the weights (in kg) of the same geese that have been captured in two consecutive years (called I and II).

Year I	4.78	4.85	4.09	5.00	4.90	4.86	5.37	4.68	5.28	5.11
Year II	4.99	5.05	4.53	4.97	5.48	5.03	5.01	4.78	4.99	5.07

Goose survey (Po River)

1. Explain briefly why the statistical models of these two studies are deeply different.
2. **(Ducks of the Yellow River)** With a confidence level $\alpha = 5\%$, decide whether the mean weight of the ducks of the Yellow River has changed between Year 1 and Year 2 or not.
3. List the assumptions you made to answer question 2.
4. **(Geese of the Po River)** With a confidence level $\alpha = 5\%$, decide whether the mean weight of the geese of the Po River has changed between Year I and Year II or not.
5. List the assumptions you made to answer question 4.