

Math 447 - Spring 2025 - Homework 11

Published: Sunday, March 30, 2025

Status - Reading Assignments:

Here are the reading assignments to be completed before the first one of this HW.

WMS (Wackerly, et al. Textbook):
ch.2 - ch.5.8 (skip 3.10, 4.11)

MF447 lecture notes:
ch.1 - ch.5, ch.6 (skim), ch.7 - ch.11.7

Other:
Nothing assigned yet

New reading assignments:

Really important for the WMS reading assignments: Work through the examples!

Reading assignment 1 - due: Monday, March 31:

- Carefully read MF ch.11.8 and WMS ch.5.9 (Multinomial Probability Distribution). Work through all examples!
- Carefully read MF ch.11.9 through Theorem 11.23 (Joint PDF of the order statistic).

Reading assignment 2 - due: Wednesday, April 2:

- Carefully read the remainder of MF ch.11.9. Work through all examples!
- Carefully read WMS ch.6.7(!) (Order Statistics) Work through all examples!

Reading assignment 3 - due Friday, April 4:

- Read MF ch.11.10. Note that I have removed the  symbol from this chapter, so it is NOT optional. However, all you have to remember are the two theorems of that chapter.
- Read WMS ch.5.10 in conjunction with MF ch.11.10.
- Carefully read WMS ch.5.11 on conditional expectations. Work through all examples!

General note on written assignments: I will not collect those assignments for grading but doing them might be helpful for your quizzes and exams. Be sure to work the examples!

Written assignments are on the next page.

(a) Work closed book through the examples given in the assigned reading, both in MF and WMS.

(b) Write from memory the many definitions and theorems of MF ch.11.

- Understand that conditioning w.r.t. an independent random element has no effect in the sense that, e.g., $f_{Y_1|Y_2}(y_1 | y_2) = f_{Y_1}(y_1)$.
- independent \Rightarrow uncorrelated. The other direction is guaranteed only for jointly **normal** (Y_1, Y_2) !
- Expect a lot of testing on conditioning with respect to a random element!
- Also, order statistics will be tested extensively.

(d) All WMS exercises below are odd-numbered, so the solutions are in the book.

- WMS ch.5.5 exercises: None exist.
- WMS ch.5.6 exercises: #5.75, 5.77, 5.79
- WMS ch.5.7 & 5.8 exercises: #5.93, 5.103, 5.113

Selected answers:

None, since all answers to (a) can be found in WMS and the lecture notes.