

Math 447 - Spring 2024 - Homework 13

Published: wednesday, April 10, 2024

Status - Reading Assignments:

Here are the reading assignments you were asked to complete before the first one of this HW.

WMS (Wackerly, et al. Textbook): ch.1 - 7.3

MF447 lecture notes: Ch.1 - 10.4

Other: Nothing assigned yet

New reading assignments:

- When studying the WMS book, be sure to pay extra attention to the examples!

Reading assignment 1 - due Monday, April 15:

- Carefully read WMS ch.7.5.
- Carefully read WMS ch.8.1-8.2.

Reading assignment 2 - due Wednesday, April 17:

- Study for the midterm!

Reading assignment 3 - due Friday, April 19:

- Can you derive the formula $f_{\vec{Y}_{(\bullet)}}(\vec{y}) = n! \cdot \prod_{j=1}^n f(y_j) = n! f(y_1) \cdots f(y_n)$ of the order statistic's joint PDF?

Written assignments - Not collected for grading:

- When studying the WMS book, be sure to pay extra attention to the examples!

(a) Write from memory the following and compare them with the MF lecture notes:

- Definitions and major propositions concerning order statistics \square multinomial sequences to derive density formulas
- Definitions and major propositions concerning the MGF method \square The role of independence when dealing with sums of random variables \square Review the MGFs for the important distributions, also the tough ones: normal, Poisson, geometric, binomial
- Not on the exam, but do it now: \square convergence in probability \square Understand the example $\Omega = [0, 1]$ with uniform distribution and $Y_n(\omega) = \omega^n$

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

- WMS ch.7.2 exercises (Sampling distributions related to the normal distribution): #7.13, 7.21, 7.31
- WMS ch.7.3 exercises (The Central Limit Theorem): #7.43, 7.45, 7.53, 7.55
- WMS ch.7.5 exercises (The Normal Approximation to the Binomial Distribution): #7.73, 7.75, 7.77, 7.79, 7.81