Math 447 - Fall 2024 - Homework 15

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Status - Reading Assignments:

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

WMS (Wackerly, et al. Textbook):

Ch.1 - 7.2

MF447 lecture notes:

Ch.1 - 3, ch.4 (non optional parts), ch.5, ch.6 (strong students), ch.7 - 13.4

Other:

Nothing assigned yet

New reading assignments:
None!

Written assignments:

a. Pick for each one of the discrete and continuous distributions we have covered at least one textual example that specifies in some detail a typical application context in which this distribution is used. Example: A Poisson variable with parameter $\lambda = 10$ may be used model the count of infections which occur on average at a rate of 10 per month.

b. • Can you write from memory the PMFs/PDFs, MGFs, expectations and variances of the discrete and continuous distributions we have covered? • Given an MGF of the random variables we have covered, do you recognize the distribution?

c. What problems are best attacked by combinatorial methods?

d. • Can you write from memory the relationship between joint, marginal, and conditional densities and PMFs? • Given the joint PMF of two discrete random variables each of which only takes two or three or four values, can you compute the marginals, joint PDFs, unconditional and conditional expectations and variances?

e. Do you recognize a problem that must be solved by Bayes? Can you draw the appropriate tree diagram?

f. If you had problems solving the integrals that occurred in the MF lecture notes, the WMS text, the exams and quizzes (including MGF computation), review the material NOW. • **For the record:** There will be a problem on the final exam somewhat similar to the one that is solved in MF Examples 12.10 – 12.12! So study MF ch.12.3 and WMS ch.6.6!

g. How do you set up a multinomial model to compute a multivariate PDF of an order statistic?