Math 447 - Spring 2025 - Homework 09

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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.2 - ch.4.3 (skip 3.10)

MF447 lecture notes:
     ch.1 - ch.5, ch.6 (skim), ch.7 - ch.10.3

Other:
     Nothing assigned yet

New reading assignments:

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

Reading assignment 1 - due: Monday, March 17:

  a. Carefully read MF ch.10.4 – 10.5. Understand the connection between the uniform distribution and the quantile function. Work through all the examples given there!
  b. Carefully read WMS ch.4.4 - 4.5. Work through all the examples given there!

Reading assignment 2 - due: Wednesday, March 19:

  a. Carefully read MF ch.10.6. Work through all the examples given there!
  b. skim MF ch.10.7 (optional here, but may be important in Math 448) .
  c. Carefully read WMS ch.4.6 and 4.9. Work through all the examples given there!
  d. skim WMS ch.4.7 (optional here, but may be important in Math 448) and ch.4.8.

Reading assignment 3 - due Friday, March 21:

  a. Study for the midterm!

> **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. The WMS examples become disproportionately more important in the application oriented course material.

(b) You must be able to write from memory the PDFs, expectations, variances, MGFs of
$\boxdot\ Y \sim \text{uniform}(\theta_1, \theta_2)$ $\boxdot\ Y \sim \mathcal{N}(\mu, \sigma^2)$ $\boxdot\ Y \sim \text{gamma}(\alpha, \beta)$ $\boxdot\ Y \sim \chi^2(\text{df} = \nu)$
$\boxdot\ Y \sim \text{expon}(\beta)$
Exception: You need not remember $Var[Y]$ and $m_Y(t)$ for $Y \sim \text{uniform}(\theta_1, \theta_2)$.

(c) Write from memory the memorylessness of the exponential distribution.

(d) All WMS exercises below are odd-numbered, so the solutions are in the book.
- WMS ch.3.11 exercises: #3.11.167, 3.11.171, 3.11.177
- WMS ch.4.2 exercises: #4.2.001, 4.2.007, 4.2.011, 4.2.017
- WMS ch.4.3 exercises: #4.3.025, 4.3.031
- WMS ch.4.4 exercises: #4.4.051
- WMS ch.4.5 exercises: #4.5.059, 4.5.071, 4.5.077

Selected answers:

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