

Math 330 Section 6 - Fall 2019 - Homework 10

Published: Thursday, October 10, 2019
Last submission: Friday, November 25, 2019

Running total: 39 points

Status - Reading Assignments:

Here is the status of the reading assignments you were asked to complete so far

B/G (Beck/Geoghegan) Textbook:
ch.1 – ch.7 (ch.7 only until thm.7.17)

MF lecture notes:
ch.2, ch.3, ch.5 – ch.8.4

B/K lecture notes:
ch.1.1 (Introduction to sets) (optional)
ch.1.2 (Introduction to Functions) but skip ch.1.2.4: Floor and Ceiling Functions (optional)

New reading assignments:

Reading assignment 1 - due Monday, October 14:

- a. Read carefully the remainder of MF ch.8 (i.e., ch.8.5)
- b. Read carefully MF ch.9.1
- c. Skim B/G ch.8.1–8.2 and read carefully B/G ch.8.3 and 8.4 (nothing you have not already encountered before in MF ch.3 and ch.9.1)

Reading assignment 2 - due: Wednesday, October 16: (no class)

- a. Read carefully MF ch.9.2 and read extra carefully MF ch.9.3 through prop.9.17.

Reading assignment 3 - due Friday, October 18:

- a. Read extra carefully the remainder of MF ch.9.3 and read carefully MF ch.9.4

Written assignment 1:

Prove part c of prop.7.5 by induction on n : Given the assumptions in that proposition, it follows from $A_n \neq \emptyset$ that $a_n = \min(A_n) \geq n$. You may reference parts a and b of that proposition.

Written assignment 2:

Prove lemma 7.1: Let X, Ω be sets such that $X \subseteq \Omega$ and $\omega \in X^{\complement}$, and let $\mathfrak{B} := \{A \uplus \{\omega\} : A \in 2^X\}$.

Then the function $F : 2^X \rightarrow \mathfrak{B}; A \mapsto A \uplus \{\omega\}$ is a bijection.

Written assignment 3:

Prove cor.7.3: If X is uncountable and $A \subseteq X$ is countable then A^{\complement} is uncountable.