

Math 330 Section 5 - Fall 2023 - Homework 11

Published: Saturday, October 21, 2023
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Running total: 35 points

Status - Reading Assignments:

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

MF lecture notes:

ch.2.1 – 2.7, ch.3, skim ch.4 (optional), ch.5 - ch.9.3, Proposition 9.17

B/G (Beck/Geoghegan) Textbook (optional, EXCEPT for ch.3 on logic):

ch.1 – 3, ch.5 – 7

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 23:

- a. Read very carefully the remainder of MF ch.9.3 A through understanding of convergence and continuity is absolutely necessary to understand those topics in the abstract settings of metric and topological spaces!

Reading assignment 2 - due Wednesday, October 25:

- a. Carefully read MF ch.9.4 – 9.6.

Reading assignment 3 - due Friday, October 27:

- a. Carefully read MF ch.9.7
- b. Read carefully MF ch.9.8 until before Proposition 9.43 and skim the optional remainder.
- c. Skip the optional MF ch.9.9 (Sequences of Sets and Indicator functions and their \liminf and \limsup). The stronger students are encouraged to skim the contents, in particular the last remark.

Written assignment 1:

Prove Proposition 6.39: Let $n \in \mathbb{N}$ such that $n > 1$. Then n has a prime factorization.

Hint: Use strong induction on n .

Written assignment 2:

Prove the following part of Proposition 6.40:

If two natural numbers m and n are relatively prime then they possess no common factors:

Hint: Use Proposition 6.37.