

Math 330 Section 5 - Spring 2022 - Homework 09

Published: Thursday, March 17, 2022
Last submission: Friday, April 1, 2022

Running total: 38 points

Status - Reading Assignments:

Here is the status of the reading assignments you were asked to complete by this date.

MF lecture notes:

ch.2.1 - 2.4, ch.3, ch.4 (skim), ch.5 - 8.3 (skip 6.5, skim 8.2)

B/G (Beck/Geoghegan) Textbook:

ch.1 - 7.1

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 (Spring break):

Reading assignment 1 - due Monday, March 21:

- a. Read carefully MF ch.8.4 until before Proposition 8.11 and skim the remainder of this chapter.
- b. Skim MF ch.8.5.

Reading assignment 2 - due: Wednesday, March 23:

- Read carefully MF ch.9.1.

Reading assignment 3 - due Friday, March 25:

- Read carefully MF ch.9.2.

Written assignments are on p.2.

General note on written assignments: Unless expressly stated otherwise, to prove a proposition or theorem you are allowed to make use of everything in the book up to but NOT including the specific item you are asked to prove.

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 (\Rightarrow) of the proposition that follows Remark 6.14 (voided):

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

Hint: Use Proposition 6.37.

Written assignment 3:

Prove the reverse direction of the proposition that follows Remark 6.14 (voided):

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

Hint: Use Proposition 6.37 and the result of assignment 1.