

Math 330 Section 1 - Spring 2016 - Homework 13

Due date: April 11, 2016
Last submission April 25, 2016

Running total: 47 points

Status - Reading Assignments:

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

B/G (Beck/Geoghegan) Textbook:

- all of ch.1 - ch.6
- all of ch.7.1; ch.7.2 until before thm.7.15
- all of ch.8 - ch.11
- ch.13.1 and 13.2 **without looking at the proofs**
- ch.13.3, 13.4 and 13.5 **including proofs**

“MF additional material”:

- ch.2 - ch.6 (prop.5.3 through prop.5.5 without proofs)
- ch.6
- ch.7 until before def.7.10 “Basis and neighborhood basis” in ch.7.1.3
- ch.7.1.4 and 7.1.5

Other course material:

- “Logic part 1”
- “Sets part 1”, “Sets part 2”,
- “Functions part 1”, “Functions part 2”
- Stewart Calculus 7ed - ch.1.7: “The Precise Definition of a Limit”

New reading assignments:

Reading assignment 1 - due: Monday, April 11 Read carefully B/G ch.12.

Reading assignment 2 - due: Wednesday, April 13 Read carefully MF ch.7.1.6 and skim through the unread parts of ch.7.1.3 (starting at def.7.10 “Basis and neighborhood basis”).

Reading assignment 3 - due: Thursday, April 14 Finish MF ch.7.1: read carefully ch. 7.1.7.

Reading assignment 4 - due: Friday, April 8 Read carefully the beginning of MF ch.7.2 until the end of ch.7.2.2.

Assignment 1: Prove B/G Prop.11.6, p.108: Let $m, n, s, t \in \mathbb{Z}$. Let $n, t \neq 0$. Then $\frac{m}{n} + \frac{s}{t} = \frac{mt + ns}{nt}$.

Assignment 2: Prove B/G Thm.11.12, p.110: If $r \in \mathbb{N}$ is not a perfect square, then \sqrt{r} is irrational.
Hint: Study the proof of prop.11.10 carefully and you’ll see that you can use it with small alterations.

Assignment 3: Use everything up-to and including prop.11.10 PLUS all of prop.11.20 and prop.11.21 to prove the following: Let $m, n \in \mathbb{Z} \setminus \{0\}$. Then $(m/n)\sqrt{2}$ is irrational.