Math 330 Section 2 - Spring 2017 - Homework 13

Published: Friday, March 23, 2017 *Running total:* 48 *points*
Last submission: Friday, April 7, 2017

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.12 (ch.7 carefully until before thm.7.17, ch.11 until cor.11.23)

MF lecture notes:
- ch.1 - ch.2, ch.4 - ch.6
- all of ch.8 except ch.8.3
- all of ch.9 except ch.9.2.2
- ch.16 (addenda to B/G text)

Other material:
- B/K lecture notes ch.1 – section 1, ch.4.1, ch.4.2
  (optional reading – good for examples, improved understanding)
- Stewart Calculus: "The Precise Definition of a Limit" (ch.1.7 in the 7th edition).

New reading assignments:

Reading assignment 1 - due Monday, March 27:
- **a.** Read carefully MF ch.8.3 (and you'll be finished with ch.8.)
- **b.** Review MF ch.5.3 (countable sets). It will make it easier to understand the more formal readings about cardinality for this week.
- **c.** Read carefully B/G ch.13.1 – 13.3 (cardinality). You may need to review left/right inverses and how they relate to injectivity and surjectivity.

Reading assignment 2 - due Tuesday, March 28:
- **a.** Read carefully the remainder of B/G ch.13.

Reading assignment 3 - due Wednesday, March 29:
- **a.** Read carefully MF ch.7 up to and including cor.7.3. Skip the proof of prop.7.3 but be sure to look at remark 7.1.

Reading assignment 4 - due: Friday, March 31:
- **a.** Read carefully the remainder of MF ch.7.

Written assignment 1:
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.

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