Math 330 Section 7 - Spring 2019 - Homework 15

Published: Tueday, April 9, 2019 *Running total: 47 points*
Last submission: Friday, April 26, 2019

Update April 7, 2019

Correction to reading assignment 3: Changed from MF ch.13.1 – 13.2 to ch.13.1.1 – 13.1.2!

Status - Reading Assignments:

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

B/G (Beck/Geoghegan) Textbook:
Preface and ch.1 – ch.6, ch.7.1, ch.8 – ch.13

MF lecture notes:
ch.1 – ch.3; ch.5 – ch.7 (skim ch.6.3); ch.8.1 – 8.2; ch.9.1 through prop.9.7; ch.9.2;
ch.10 – ch.11; ch.12.1; ch.19.7(!)

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

Other:
Stewart Calculus 7ed - ch.1.7: "The Precise Definition of a Limit". If you have a newer or older edition then you may have to search through the table of contents and/or consult the index.

New reading assignments:

Reading assignment 1 - due Monday, April 15:

- **a.** Read ch.12.2.1 None of the definitions and propositions will be on any quiz and exam unless they have a direct bearing on the material in ch.12.2.2.
- **b.** Read carefully MF ch.12.2.2 until before def.12.18 (net area and area).

Reading assignment 2 - due: Wednesday, April 17:

- Read carefully the remainder of MF ch.12.2.

Reading assignment 3 - due Friday, April 19:

- Read carefully MF ch.13.1.1 and ch.13.1.2. Almost everything there can be traced back to ch.12.2.2 on norms via the equation $d(\vec{x}, \vec{y}) = \|\vec{x} - \vec{y}\|$.

Written assignment 1: Prove prop 11.1: Let X, Y be two sets such that card(X) = card(Y).
Then card(2^X) = card(2^Y).

Hint: Use prop.9.6 to prove that the set function $f : 2^X \to 2^Y$ is bijective. Why does that help?

Written assignment 2: Prove prop.11.6: The relation $X \sim Y \Leftrightarrow X = Y$ or both X and Y are nonempty and there is a bijective function $f : X \to Y$ is an equivalence relation on 2^{Ω}.

Hint: Examine the case $X = \emptyset$ separately!