Math 330 Section 5 - Spring 2018 - Homework 05

Published: Thursday, February 1, 2018 *Running total: 23 points*
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Update Feb 13, 2018

Written assignment 2 ONLY is due on 2/23/2018!

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.2 except the material on gcd(m, n), all of ch.3 – ch.5 .

MF lecture notes:
- ch.1 – ch.3, ch.5.1 – 5.3.
- ch.17 (Addenda to B/G): the chapters corresponding to what has been assigned so far from B/G.

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

New reading assignments:

Reading assignment 1 - due Monday, February 5:

a. Carefully read the remainder of MF ch.5.
b. Carefully read B/G ch.6.1 (Equivalence Relations)

Reading assignment 2 - due: Wednesday, February 7:

a. Carefully read MF ch.6 but **skip** ch.6.3

Reading assignment 3 - due Friday, February 9:

a. Carefully read MF ch.7.

Written assignment 1: (You'll get one point each for **a** and **b**)
Given are four sets A, B, C, D. prove that

a. $(A \times B) \cap (C \times D) \subseteq (A \cap C) \times (B \cap D)$,
b. $(A \times B) \cap (C \times D) \supseteq (A \cap C) \times (B \cap D)$.

Written assignment 2: Let $(G, \diamond)$ be a group, let $(H_i)_{i \in J}$ be a family of subgroups of G, and let $H := \bigcap_{i \in J} H_i$.
Prove that H is a subgroup of G. Note that J is an **arbitrary** set of indices and you cannot use induction!