Math 330 Section 3 - Fall 2017 - Homework 01

Published: Tuesday, August 22, 2017 *Running total: 5 points*
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Status - Reading Assignments:

Here you would find the previously assigned reading assignments. There are none because the first such assignment comes with this first homework.

New reading assignments:

In the following B/G refers to the (yellow) textbook and MF refers to the Instructor's lecture notes (see the Course Material page of the course website).

Reading assignment 1 - due Wednesday, August 23:

a. Read carefully ch.13.1(!) (Semigroups and Groups) of the MF doc up to and including example 13.5, but SKIP examples 13.2 and 13.3 and anything that involves complex numbers.
b. Needed for **a**: If you are not familiar with the differences between natural numbers, integers, and rational numbers skim ch.2.2 (Numbers) of the MF doc up to and including definition 2.9.

If you did not see this assignment in time for Wednesday's lecture then do the reading for Friday, August 25.

Reading assignment 2 - due Friday, August 25:

a. Read the preface and the notes for both student and instructor in the B/G (Beck Geoghegan) text.
b. Read carefully B/G ch.1 (Integers).

Reading assignment 3 - due Friday, August 25:

a. Read ch.1 (Before You Start) of the MF document.
b. Look at the sample homework assignment which is posted on the Homework page of the course website.

> **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 B/G Prop.1.8: Let $a \in \mathbb{Z}$. Then $(-a) + a = 0$.

> Use here and in all subsequent homeworks the notation given in the assignment sheet, **even if the symbols are different from the ones used in the text!**

Written assignment 2:
Prove B/G Prop.1.10: Let $a, x_1, x_2 \in \mathbb{Z}$. If both $a + x_1 = 0$ and $a + x_2 = 0$ then $x_1 = x_2$.
Hint: You may use B/G prop.1.6 – 1.9 in addition to the axioms.

Hints for assignments #3 and #4:
a. Do **NOT** use commutativity: the variables appear in the same left–to–right order on both sides!

b. Obviously you'll have to utilize ax.1.1(ii) to prove #3 and #4. Tell me me what you plug in for m, n, p in that axiom.

Written assignment 3:
Prove B/G Prop.1.11(ii), part 1: Let $a, b, x, y \in \mathbb{Z}$. Then $a + \big(b + (x + y)\big) \ = \ (a + b) + (x + y)$

Written assignment 4:
Prove B/G Prop.1.11(ii), part 2: Let $a, b, x, y \in \mathbb{Z}$. Then $(a + b) + (x + y) \ = \ \big(a + (b + x)\big) + y$

Written assignment 5:
Prove B/G Prop.1.11(iv): Let $x, y, z \in \mathbb{Z}$. Then $x(yz) \ = \ z(xy)$