

## Math 330 Section 7 - Spring 2019 - Homework 10

*Published: Thursday, March 7, 2019*  
*Last submission: Wednesday, March 27, 2019*

*Running total: 38 points*

**Update March 11, 2019**

<i>Deadline extended from Monday, March 25, 2019</i>
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### 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

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.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

### New reading assignments:

#### Reading assignment 1 - due Monday, March 11:

- Read carefully MF ch.10.1 – 10.2.

#### Reading assignment 2 - due: Wednesday, March 6:

- Study for midterm #1. Look at what's in MF ch.20.

#### Reading assignment 3 - due Friday, March 8:

- a. Read carefully MF ch.10.3 until the beginning of ch.10.3.1.

### Written assignments:

**Written assignment 1:** Use anything up-to and including MF thm.7.3 to prove MF cor.7.3:

Let the set  $X$  be uncountable and let  $A \subseteq X$  be countable. Then its complement  $A^c$  is uncountable.

#### Written assignment 2:

Prove the following half of thm.8.1.b (De Morgan's Law):

Let  $(A_\alpha)_{\alpha \in I}$  be a family of subsets of a universal set  $\Omega$ . Then  $(\bigcap_{\alpha} A_\alpha)^c \subseteq \bigcup_{\alpha} A_\alpha^c$ .