Math 330 Section 6 - Fall 2019 - Homework 07

Published: Thursday, September 19, 2019   *Running total: 32 points*
Last submission: Friday, October 4, 2019

Status - Reading Assignments:

Here is the status of the reading assignments you were asked to complete so far (includes those of homework 5):

B/G (Beck/Geoghegan) Textbook:
     ch.1 – ch.5

MF lecture notes:
     ch.2, ch.3, ch.5, ch.6.1 – ch.6.12 (skim ch.6.3)

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

New reading assignments:

Reading assignment 1 - due Monday, September 23:

     a. Read carefully the remainder of MF ch.6.
     b. Read carefully B/G ch.6.1. You know the material already.

Reading assignment 2 - due: Wednesday, September 25:

     a. Read carefully the remainder of B/G ch.6. You know most of the material already.

Reading assignment 3 - due Friday, September 27:

     a. Carefully read B/G ch.7.1 but skip all proofs. You have seen the important material in more general form (base β rather than base 10) in MF ch.6
     c. Read B/G ch.7.2 but only until before thm.7.17 Compare the algorithm given there with the one of MF remark 6.11.

Written assignment 1: Let $x_0 = 8$, $x_1 = 16$, $x_{n+1} = 6x_{n-1} - x_n$ for $n \in \mathbb{N}$.

Prove that $x_n = 2^{n+3}$ for every integer $n \geq 0$.

Hint: Use strong induction.

Written assignment 2:
Prove prop.6.7.**c**: Let $\beta \in \mathbb{Z}$ and $k, m \in \mathbb{Z}_{\geq 0}$. Then $(\beta^m)^k = \beta^{mk}$.

Hint: Use induction on k.