Math 250: Daily Preparation

Overview

At this point in the course, we have learned a considerable body of mathematics: key logic and proof techniques, some basic number theory regarding divisibility and congruence arithmetic, some elementary set theory, and the principle of mathematical induction. Two main ideas remain, and those ideas are integrally connected: functions and relations. The notion of *function* is everywhere in mathematics and is, in many ways, familiar to you. As we have done with several other ideas in the course, we want to look at functions from a deeper and more sophisticated mathematical perspective. That will be the central goal of our work over the next several class meetings (with the exception of Tuesday, 03/31, when we take Exam 2).

Basic learning objectives

These are the tasks you should be able to perform with reasonable fluency **when you arrive at our next class meeting**. Important new vocabulary words are indicated *in italics*.

- State and understand the definition of a *function*.
- Know the difference between the *domain* and *codomain* of a function, as well as what we mean by the *image* and *preimage* of certain elements.
- Understand the definition of the *graph* of a function and how the graph consists of a special *set*.

Advanced learning objectives

In addition to mastering the basic objectives, here are the tasks you should be able to perform in the near future **with practice and further study**:

- Be comfortable working with a wide variety of different functions and understanding their various features: domain, codomain, range, and general affect on various input.

Resources

Reading: Read pages 284-291.

Watching: Here are some additional resources that have been developed to support your learning:

- Screencast 6.1.1: http://gvsu.edu/s/uG
- Screencast 6.1.2: http://gvsu.edu/s/uH

Questions

Respond to the following questions on separate paper, as explained in the document that describes guidelines and expectations for daily preparatory assignments. You should be prepared to show me your responses at the start of class; I will review your work briefly sometime before the end of class.

1. Complete Preview Activity 1 on pages 281-282. (Please skip Preview Activity 2.)

2. In your own words, what is a *function*?

3. Complete Progress Check 6.1 on page 286.