

## 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.

### 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*.

- Explain what it means for two functions to be equal.
- Understand how functions involving congruences work.
- 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 describing functions in many variables and the domain, range, and codomain of such a function.
- Understand how functions encode mathematical processes.

### Resources

*Reading*: Read pages 295-302.

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

- Screencast 6.2.1: <https://youtu.be/OolikZ6xZMQ>
- Screencast 6.2.2: [https://youtu.be/gJd56pwX\\_K0](https://youtu.be/gJd56pwX_K0)

### 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 Progress Check 6.5 on page 297.
2. Complete Progress Check 6.6 on pages 298-299.
3. Complete Progress Check 6.9 on pages 302.