Math 250: Daily Preparation

Overview

I have long thought the following about the art of mathematics instruction: *teaching mathematics involves telling half-truths carefully*. You are now at a point in your mathematical education where you are learning the "whole truth." One of those "whole truths" is that *every single function has an inverse*. That may sound strange at first, since you are accustomed to saying things like "the function $f(x) = x^2$ is does not have an inverse since the function is not an injection." But, as we will see in the upcoming section, through an appropriate definition of the term *inverse*, it will indeed be the case that every function has an inverse. From there, we will make the distinction as to whether or not said inverse is itself a function. Thus, a function like f will have an *inverse*, but its inverse might not be a *function*.

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*.

- Be comfortable with how to represent a function as a set of ordered pairs.
- Read and understand Theorem 6.22, which states formally how to determine if a set of ordered pairs represents a function.
- Know the (new) definition of "the inverse of a function" and how this definition involves a new set of ordered pairs.

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**:

- Understand the new definition of the term "inverse" and how it provides a more complete and accurate picture of the possibilities with functions.
- Understand and be competent in the use of inverse notation, including in the situation where the inverse of a function is a function itself.

Resources

Reading: Read pages 336-338 (through the definition of the term "inverse of f")

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

- Screencast 6.5.1: http://gvsu.edu/s/vS
- Screencast 6.5.3: http://gvsu.edu/s/vT
- Screencasts 6.5.2 and 6.5.4 are also worth your time at some point in the near future.

Continued →

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 in Section 6.5 on pages 334-335.
2. Complete Preview Activity 2 in Section 6.5 on pages 335-336.
3. Complete Progress Check 6.23 on p. 337.