MATH 250: DAILY PREPARATION

Overview

In section 3.5 we first encounter the division algorithm. This formally allows us to do something that we've probably been wanting to do all along: preform division with integers. The proof is quite long, and outside the scope of this class (but if you take number theory with me I'll prove it for you!).

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 the Division Algorithm.
- Understand how the Division Algorithm formally tells us the cases to consider in any proof involving divisibility by n or congruence modulo n.

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 many key perspectives that the Division Algorithm affords. See p. 144 of the text particularly.
- Apply the Division Algorithm appropriately in relevant proof settings.
- Understand how the "properties of congruence" section of 3.5 enables us to streamline several kinds of proof by cases by focusing solely on certain remainders.

Resources

Reading: Read page 141-145.

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

- Screencast 3.5.1: http://gvsu.edu/s/sk
- Screencast 3.5.2: http://gvsu.edu/s/sl

Questions

1. If we consider the question of the divisibility of an arbitrary integer by the number 5, how many possible remainders are there?

2. If we consider the question of divisibility of an arbitrary integer by the number 4, what are the possible remainders that can arise?