

# MATHEMATICS 300 — FALL 2017

## *Introduction to Mathematical Reasoning*

*H. J. Sussmann*

### **HOMEWORK ASSIGNMENT NO. 2, DUE ON WEDNESDAY, SEPTEMBER 20**

1. Problems 7, 9, 10, 11, 12, 13, and 14 from the second set of lecture notes.
2. Analyze the proof of Theorem 6 in the first set of lecture notes, as follows:
  - a. List the steps, and indicate exactly, for each step:
    - i. what the step asserts,
    - ii. what the justification is,
    - iii. which objects the step talks about.
    - iv. where (in the proof or in the theorem statement before the proof) these objects have been introduced.

**EXAMPLE:** let us look at the proof of Corollary 1.

- i. Step 1 asserts that  $b$  divides  $bc$ .
- ii. The justification is:  $b$  divides  $bc$  because Definition 9 says that  $b$  divides  $bc$  if there exists an integer  $k$  such that  $bc = bk$ , and in our case such an integer exists, because we can take  $k$  to be  $c$ .
- iii. Step 1 talks about the integers  $b$  and  $c$ .
- iv.  $b$  and  $c$  were introduced in the statement of the corollary.