

March 15, 2019

Today in class we:

- Went over the previous isomorphism homework (see scanned page)
  - While lots of people did some stuff that was correct, no one did everything perfect. So I didn't put the scores in the grade book. Instead I assigned a replacement assignment (see scanned page) of a similar function to show is an isomorphism.
- I passed out a new green definition/theorem sheet, and we discussed:
  - what the well ordering axiom says
  - theorem 17 is division with remainders that we did in class last time
  - theorem 18 is the way of representing a gcd in terms of the two numbers that you started with, This is the second part of the Euclidean algorithm we did last time. If you know how to do the Euclidean algorithm for greatest common divisors, then you know the middle explanation of one proof of theorem 18.
  - We proved theorem 19 in class by using theorem 18 and rewriting the divisibility statements using the equation form in the definition (page 3 of the definitions and theorems note, just after theorem 12). We discovered that I typed it up wrong, and the conclusion should be that  $c|d$  ( $c$  is a factor of  $d$ ) and not vice versa. This proof is essentially the same as Step 1 of corollary 1.3 on page 13 of the textbook. If you weren't in class make sure you can prove this (you could do it by yourself)!
  - We proved theorem 20 in class also. Make sure you understand how to prove theorem 20 (see proof of theorem 1.4 on page 14 of the text)!

Homework:

Prove that the function provided in class is an isomorphism (see scanned page).

Try to prove all of these (everyone should be able to prove at least one, and many of you will be able to prove all of them):

pg 16 # 26 and 27

Green sheet theorem 21

Green sheet theorem 22.