

Math 109 Winter 2015 Homework 1, due 1/9/2015 in HW box
in basement of AP&M by **3 pm**

(All exercise and page numbers refer to Eccles.)

1 Reading and practice

Read Chapters 1-4 of Eccles. Do the end of chapter exercises as you read, and check your work against the answers in the back. These exercises are to test your understanding and they are not to be written up and handed in.

2 Exercises to submit on Friday 1/9

1. In the Problems I which begin on page 53, do #1,2,3,5. In these problems, explain your answer but these do not need to be written out as formal proofs.

2. Do #4 on page 53. This exercise should be written out very carefully as a formal proof. Follow the examples of proofs given in class and in the textbook. Your proof should be written in complete sentences, and should not just be a string of symbols with no words. The proof should begin with the hypothesis and argue step by step to the conclusion. Remember to use the definition we have given of “divides” which is purely a notion about integers. Do not use fractions in your proof.

3. Write out formal proofs of the following statements, following the same advice about style as in the previous problem.

(a). Let a and b be integers. Prove that if a is even and a divides b , then b is also even.

(b). Let a and b be integers. Prove that if b is odd and a divides b , then a is also odd.

(Hint: what is the contrapositive of the statement to be proved?)