

M316K – Foundations of Arithmetic
Spring 2009
Problem Set 10 – Due Monday, April 13 (but see below)

“Nature hides her secrets because of her essential loftiness, but not by means of ruse.” – Albert Einstein



The material on this problem set is the last that will appear on Exam 2.

Important Note: Since some of you may be observing Good Friday this week, I anticipate that some of you will not be in class this Friday. Therefore, I am making the homework due Monday (same day as the exam), not Friday. However, if you turn in your homework Monday, I may not be able to have my grader mark your paper. Thus I would like to have as many of your papers as possible by Friday. Therefore, if you turn in your homework by Friday (either in my office or in class), I will award you **5 bonus points**. This is a good opportunity for you to make up some ground if your homework grades have been sagging lately.

Section 4.3: 1*, 3*, 9, 11, 14.

On Problems 1 and 3, please do *all* parts, not just the ones whose answers are not listed in the back of the book. Please show your work on each of these problems. You may use whatever method you consider appropriate, but keep in mind that you may be asked to do these tasks on the exam, and in that situation you’ll want to be able to do them efficiently.

Section 5.1: 1, 2, 9, 12*, 13, 17*

On Problem 12, in addition to the correct answer (which is given in the back of the book), you should translate the problem into a mathematical expression. To me, this is much more important than getting the right answer.

On Problem 17, feel free to use the Internet, but please say what publication or website you are using. I know this exercise may seem like a bit of a hassle, but it shouldn’t be very hard to find negative numbers in the news right now.

Bonus Problems

B1. Look up *Euclid’s Algorithm* for calculating the GCF (or as some texts call it, GCD for “greatest common divisor”) of two numbers. This is a fiendishly clever method that the ancient Greek mathematician Euclid devised by thinking of numbers as lengths of line segments. Show how to use this algorithm to compute the GCF of 4012 and 7038.