MTH 310 - Spring 2011 - Homework # 4 (due Friday, 01/21/11)

Directions. Please work on the problems below. Your solutions must begin with a clear statement of the problem, followed by a clear, legible solution (or partial progress towards a solution). Please refer to the syllabus for the policy on grading and late homework.

Collaboration. I encourage you to discuss the homework problems with your classmates. However, each student must submit his or her own homework solutions. In particular, you are welcome to discuss any of the problems online on our Google Groups discussion forum.

Current Reading Assignment. To date, you should have read (at least once) sections 1.1 - 1.3 and appendices A and C. For Friday, please re-read section 1.3 and read Appendix B.

1. # 4 in Appendix C.
2. # 16 in Appendix C.
3. # 17 in section 1.2
4. # 20 in section 1.2
5. Use the Euclidean algorithm to compute the greatest common divisor of 2011 and 1492.
6. (Bonus) How does one construct positive integers \(a\) and \(b\) such that the Euclidean algorithm requires many steps before terminating? Give an example of a pair of integers which require at least 100 divisions in order to compute their greatest common divisor.