

Name:

Collaborator(s)¹:

Math 453, Section X13, Prof. Hildebrand, Spring 2011

HW Assignment 9, due Monday, 4/25/2011

Instructions

- **Rules:** The usual: Write your name on the cover sheet and staple the sheet to the assignment. The assignment is due in class at the above due date. Do the problems in order, and make sure that each problem is clearly labelled. Write legibly, using proper mathematical notation and terminology. As always, solutions, rather than answers, are expected for all problems; you have to clearly show how you arrived at the answer, using appropriate techniques, algorithms, and theorems.
- **About this assignment:** The theory of continued fractions is conceptually not very difficult, and lies very much on the “elementary” end of the Number Theory spectrum, but it does involve a certain amount of notation and machinery that one needs to learn and practice. This assignment is intended to familiarize yourself with the various concepts, notations, algorithms, and theorems about continued fractions.

To get the most out of this assignment, and to be ready for doing such problems in an exam situation, try to do the assignment without looking up definitions and notations. If necessary, review the key concepts and notations from the class notes and the text, but do so *before starting on the assignment*.

Most of the problems are easy computational problems, and most of these can be done without a calculator (the exception being #20 and #21 from 7.4); try to avoid using a calculator unless necessary.

HW 9 Problems (Chapter 7 of Strayer)

1. *7.2:9(a)
2. *7.2:9(e)
3. *7.3:17(a)
4. *7.3:17(e)
5. *7.3:18 (Prove by induction.
See hint in text.)
6. *7.4:20(a) (Calculator okay.)
7. *7.4:21(a) (Calculator okay.)
8. *7.5:33(c)
9. *7.5:38(a)
10. **Extra credit.** The “Quadratic Residue Random Walk” problem from HW 8 was unclaimed from last time, so you have one more chance to have a go at it. See HW 8 for the precise formulation.

¹If you worked with another student or in a small group on this assignment, list the names of all students involved.