

Math 581d, Fall 2010, Homework 7

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Due: November 17, 2010

Do the following exciting 1 problem, and turn it in by email (wstein@gmail.com) on Wednesday, November 17, 2010. As usual, you can find the latex of this file at <http://wstein.org/edu/2010/581d/hw/>.

1. In the directories <http://wstein.org/edu/2010/581d/notes/2010-11-10/> and <http://wstein.org/edu/2010/581d/notes/2010-11-12/> you will find two worksheets that implement numerous versions of arithmetic in the ring $\mathbf{Z}\left[\frac{1+\sqrt{5}}{2}\right]$. Rewrite them to do arithmetic in $\mathbf{Q}[\sqrt{5}]$. In several of the examples you will represent rational numbers as pairs of C long's, which is fast but can overflow.

(Note: the one example involving C++ will require you to apply a patch (or modify two lines) of your Sage library. The patch is on a trac ticket described in the worksheet.)