

18.786 Problem Set 6 - Spring 2008

Due Thursday, Apr. 17 at 1:00

Do **at least** 6 of the following problems.

1. Exercise 1 on page 134 of Janusz.
2. Exercise 2 on page 134 of Janusz (I will cover the small additional background from Janusz that you need on Tuesday, Apr. 15).
3. Use the Decomposition group and Artin map to characterize prime factorization in $\mathbb{Q}[\sqrt{3}, \sqrt{-7}]$ as fully as you can. Write down the Frobenius automorphism for two different primes.
4. Are there any tri-quadratic fields of the form $\mathbb{Q}[\sqrt{n_1}, \sqrt{n_2}, \sqrt{n_3}]$ ($n_i \in \mathbb{Z}$) in which there is a prime p with $e = f = g = 2$? If you cannot immediately find an example, try a computer search.
5. Exercise 2 on page 99 of Janusz.
6. Exercise 3 on page 99 of Janusz.
7. Exercise 4 on page 99 of Janusz.
8. Exercise 7 on page 99 of Janusz.