Math 418: Problem Set 7.

Due date: In class on Wednesday, April 7.
Webpage: http://dunfield.info/418
Office hours: Monday 10-11, Tuesday 3-5, and by appointment.

All problems are from Dummit and Foote, *Abstract Algebra*, 3rd edition.

1. Section 14.2 #17.

2. (A followup to the preceding problem.) Let K/F be a Galois extension. For $\alpha \in K$, consider $T_\alpha \colon K \to K$ where $T_\alpha(\beta) = \alpha\beta$. As you know, this is an F-linear transformation; let A be the associated matrix with respect to some F-basis of K. Show that $\det(A) = N_{K/F}(\alpha)$.

3. Section 14.4 #2.

4. Section 14.6 #15.

5. Section 14.6 #19.

6. Section 14.6 #20.