

Math 81. *Abstract Algebra*.

**Homework 7.** Due on Wednesday, 3/4/2009.

- Determine all the subfields of the splitting field of  $x^4 - 2$  which are Galois over  $\mathbb{Q}$ .
- Page 582, problem 11.  
Hint: For the first part, it helps to show first that  $A_4$  is the only subgroup of  $S_4$  with index 2. Also, Figure 8 from Chapter 3.5 may be useful.
- Page 589, problems 1, 3, 8.
- Page 595, problem 1.