Homework Assignment # 3

Math 560
Kaul
Spring 2013
Due Tuesday, May 28

Instructions: To receive full credit, each solution must be neat and legible. Explain your reasoning fully and use complete sentences – an answer without an explanation will receive no credit. Staple the homework sheet to the front of your work.

1. Garling p. 94 # 11.1

2. Garling p. 95 # 11.6 (c)

3. Let \( f = x^4 - 2 \) and let \( \Sigma \) be the splitting field for \( f \) over \( \mathbb{Z}_7 \). Construct the subgroup lattice for \( \Gamma(f) \) and the lattice of intermediate fields for \( \Sigma : \mathbb{Z}_7 \)

4. Garling p. 96 # 11.7 (a)

5. Let \( f = x^2 + 2 \) and let \( \Sigma \) be the splitting field for \( f \) over \( \mathbb{Q} \). Construct the subgroup lattice for \( \Gamma(f) \) and the lattice of intermediate subfields for \( \Sigma : \mathbb{Q} \).

6. Garling p. 98 #11.9