

Exercices in Algebraic Number Theory

Week 1

March 27, 2012

1. Let K be a Galois extension of \mathbb{Q} . Can K have both real and complex embeddings? How about non Galois extensions?
2. Let L/K be a finite separable extensions. Prove that there are only finitely many intermediary extensions $K \subset E \subset L$. How about non separable extensions?
3. Let L/K be a finite separable extension. Prove that there exists $\alpha \in L$ such that $L = K[\alpha]$.