

Homework set # 7

Due on 3/8

0. The following problems from Artin “Algebra” edition 2: 16.7.1 (and check your work with the FTGT), 16.7.2
1. Suppose K is a Galois extension of F of degree p^n for some prime p and some $n \geq 1$. Show that there is a Galois extension of F contained in K of degree p^{n-1} . (Note you may use the following 2 facts that you proved on midterm 2 in the fall semester: 1) If p is a prime and P is a group of prime power order p^α for some $\alpha \geq 1$ then P has a nontrivial center. 2) Let p be a prime, and let G be a group of order p^α then G has a subgroup of order p^β for every β with $0 \leq \beta \leq \alpha$.)