HOMEWORK 3

DUE 24 APRIL 2013

1. (a) Find the lattice of the subfields F of $L = \mathbb{F}_{3^{16}}$ that contain $K = \mathbb{F}_{3^2}$.

   (b) Determine which subfields F have the property that L/F is normal. Justify your answer.

   (c) Determine which subfields F have the property that F/K is normal. Justify your answer.

2. (a) Find the lattice of the subfields F of $K = \mathbb{Q}(\sqrt[3]{2}, \omega)$. *Hint: they all contain* $\mathbb{Q}$.

   (b) Determine which subfields F have the property that K/F is normal. Justify your answer.

   (c) Determine which subfields F have the property that $F/\mathbb{Q}$ is normal. Justify your answer.

3. Problems 1-7 from Section 8.3 in the textbook.

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