

Homework 7

1. Show that if F is normal over E and E is normal over K then F need not be normal over K .
2. Let E be the splitting field of the polynomial $x^4 - 2$ over \mathbb{Q} . Determine the Galois group $Gal(\bar{E}/\mathbb{Q})$.
3. Let E be the splitting field of the polynomial $x^4 + 1$ over \mathbb{Q} . Determine the Galois group $Gal(\bar{E}/\mathbb{Q})$.
4. Determine $Gal(\mathbb{Q}(\sqrt{2}, \sqrt{3})/\mathbb{Q})$.