

## Homework 8

1. Let  $G$  be a finite group and  $F$  any field. Show that there exist fields  $L$  and  $E$  with  $F \subseteq L \subseteq E$  and where  $E$  is Galois over  $L$  with  $Gal(E/L) \cong G$ .
2. Find an example of fields  $F \subseteq K \subseteq E$  such that  $K$  is Galois over  $F$  and  $E$  is Galois over  $K$ , but  $E$  is not Galois over  $F$ .
3. Problem 18.12 from Isaacs.