

1. The hypotheses of the *isomorphism extension theorem* are given below. What is the conclusion of the theorem?

**Theorem:** Let  $F_1 \subseteq E$  be an algebraic field extension, let  $\varphi : F_1 \rightarrow F_2$  be an isomorphism of fields, and suppose  $\overline{F_2}$  is the algebraic closure of  $F_2$

2. Complete the following definitions:

- i. Let  $F$  be a field with algebraic closure  $\overline{F}$ , and let  $F \subseteq E \subseteq \overline{F}$  be an extension of  $F$ . We say that  $E$  is a *splitting field* if:

- ii. Let  $F \subseteq E$  be a field extension of finite degree. The *index* of the extension, denoted  $\{E : F\}$ , is: