

# A Book of Abstract Algebra | (2nd Edition)



Chapter 31, Problem 2EK



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## Problem

If  $K$  is the root field of some polynomial  $a(x)$  over  $F$ ,  $K$  is also called a *normal extension* of  $F$ . There are other possible ways of defining normal extensions, which are equivalent to the above. We consider the two most common ones here: they are precisely the properties expressed in theorems 7 and 6. Let  $K$  be a finite extension of  $F$ .

Suppose that, if  $h$  is any isomorphism with domain  $K$  which fixes  $F$ , then  $h(K) \subseteq K$ . Prove that  $K$  is a normal extension of  $F$ .

## Step-by-step solution

There is no solution to this problem yet.  
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