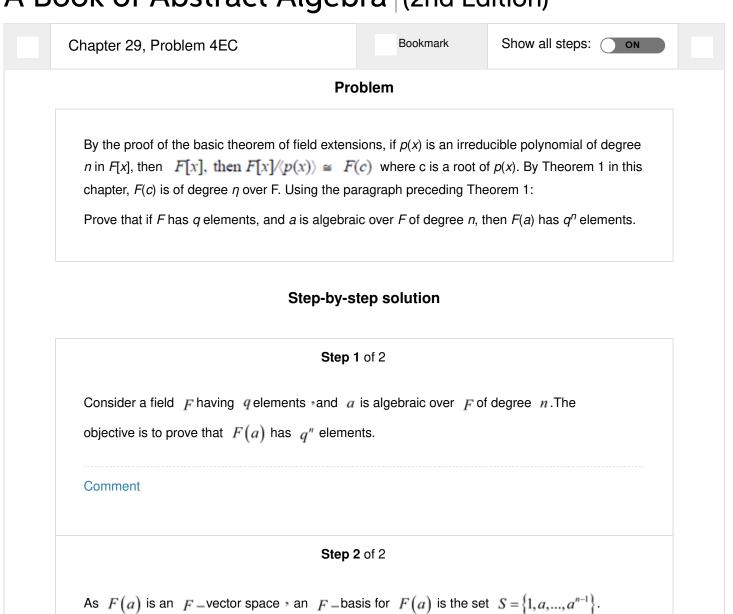
## A Book of Abstract Algebra (2nd Edition)



Thus,  $F(a) = \{b_0 + b_1 a + b_2 a^2 + ... + b_{n-1} a^{n-1} : b_i \in F, 0 \le i \le n-1\}.$ 

Note that there are q choices for  $b_0$ , q choices for  $b_1$ , and in general q choices for each  $b_i$  with  $0 \le i \le n-1$ .

In total there are  $qq...q = q^n$  choices for  $\{b_0,...,b_{n-1}\}$ .

As every element of F(a) can be uniquely expressed in this form F(a) has  $q^n$  elements.

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Comment