



Math for the people, by the people.

splitting field

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Let $f \in F[x]$ be a polynomial over a field F . A *splitting field* for f is a field extension K of F such that

1. f splits (factors into a product of linear factors) in $K[x]$,
2. K is the smallest field with this property (any sub-extension field of K which satisfies the first property is equal to K).

Theorem: Any polynomial over any field has a splitting field, and any two such splitting fields are isomorphic. A splitting field is always a normal extension of the ground field.