



**planetmath.org**

Math for the people, by the people.

**normal extension**

Canonical name	NormalExtension
Date of creation	2013-03-22 12:08:15
Last modified on	2013-03-22 12:08:15
Owner	djao (24)
Last modified by	djao (24)
Numerical id	10
Author	djao (24)
Entry type	Definition
Classification	msc 12F10
Synonym	normal
Related topic	SplittingField

A field extension  $K/F$  is *normal* if every irreducible polynomial  $f \in F[x]$  which has at least one root in  $K$  splits (factors into a product of linear factors) in  $K[x]$ .

An extension  $K/F$  of finite degree is normal if and only if there exists a polynomial  $p \in F[x]$  such that  $K$  is the splitting field for  $p$  over  $F$ .