1. Introduction

Definition 2. A *(nonarchimedean) local field* is a field complete with respect to a discrete valuation and with finite residue field.

Definition 3. A *mixed characteristic local field* is a finite field extension of the field $\mathbb{Q}_p$ of p-adic numbers, for some prime p.

Definition 4. An *equal characteristic local field* is a finite field extension of the field $\mathbb{F}_p((X))$, for some prime p.

Lemma 5. *A mixed characteristic local field is a local field.*

Lemma 6. *An equal characteristic local field is a local field.*

Definition 7. A local field is a field

Proof. Omitted, but it uses [Ser67] and also [Ser68]. □

References

[Ser67] Jean-Pierre Serre. Local class field theory. In *Algebraic Number Theory (Proc. Instructional Conf., Brighton, 1965)*, pages 128–161. Thompson, Washington, D.C., 1967.

[Ser68] Jean-Pierre Serre. *Corps locaux*. Hermann, Paris, 1968. Deuxième édition.