Prüfer domain

Canonical name	PruferDomain
Date of creation	2013-03-22 13:47:34
Last modified on	2013-03-22 13:47:34
Owner	mathcam (2727)
Last modified by	mathcam (2727)
Numerical id	8
Author	mathcam (2727)
Entry type	Definition
Classification	msc 16U10
Related topic	ValuationDomain
Related topic	DedekindDomain
Related topic	PruferRing
Related topic	InvertibleIdealsInSemiLocalRings

A commutative integral domain R is a *Prüfer domain* if every finitely generated nonzero ideal I of R is invertible.

Let R_I denote the localization of R at $R\setminus I$. Then the following statements are equivalent:

- i) R is a Prüfer domain.
- ii) For every prime ideal P in R, R_P is a valuation domain.
- iii) For every maximal ideal M in R, R_M is a valuation domain.

A Prüfer domain is a Dedekind domain if and only if it is Noetherian.

If R is a Prüfer domain with quotient field K, then any domain S such that $R \subset S \subset K$ is Prüfer.

References

[1] Thomas W. Hungerford. Algebra. Springer-Verlag, 1974. New York, NY.