XXIX Semana do IME/UFG e VI Seminário de Pesquisa e Pós-Graduação do IME/UFG

Formalização de Teoremas em Assistentes de Prova

Section 3: Provas em papel e lápis versus provas formais

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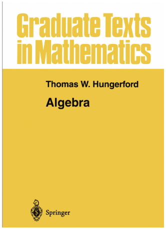
Talk's Plan

1. Section 3
   - Formalizing a simple remark in Hungerford's abstract algebra textbook

Hungerford's remark



Definition 3.5. *An integral domain* R *is a* **unique factorization domain** *provided that:*

(i) *every nonzero nonunit element* a *of* R *can be written* $a = c_1c_2 \cdots c_n$, *with* $c_1, \ldots, c_n$ *irreducible.*

(ii) *If* $a = c_1c_2 \cdots c_n$ *and* $a = d_1d_2 \cdots d_m$ (c_i, d_i *irreducible*), *then* $n = m$ *and for some permutation* σ *of* $\{1,2, \ldots, n\}$, c_i *and* $d_{\sigma(i)}$ *are associates for every* i.

REMARK. Every irreducible element in a unique factorization domain is necessarily prime by (ii). Consequently, irreducible and prime elements coincide by Theorem 3.4 (iii).