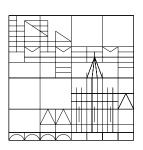
Universität Konstanz

Fachbereich Mathematik und Statistik

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Real Algebraic Geometry II Exercise Sheet 7

Exercise 1

Let G be an ordered abelian group. Consider $A, B \subseteq G$ well ordered subsets of G. Show that $A \oplus B$ is well ordered.

Exercise 2

Let k be an archimedean ordered field. Let G be a totally ordered abelian group. Show that $\big(k((G)),<_{\mathsf{lex}}\big)$ is an ordered field.

(It has been shown in the lecture that k((G)) is a field. It remains to show that $<_{\mathsf{lex}}$ is a field ordering.)

Exercise 3

Let k be an archimedean ordered field. Let G be a totally ordered abelian group.

(a) Give an example showing that in Neumann's Lemma it is necessary to assume $\varepsilon \in k((G^{>0})).$

(b) Assume supp
$$\varepsilon \in k((G^{>0}))$$
. Show that $\left(\sum_{i=0}^{\infty} \varepsilon^{i}\right) (1-\varepsilon) = 1$.

(c) Let $g_1, g_2 \in G$. Compute the inverse of $t^{g_1} + t^{g_2}$.

The exercise will be collected Friday, 05/06/2015 at box 13 near F 441.

http://www.math.uni-konstanz.de/~ dupont/rag.htm