REMARKS AND ERRATA

Maximally complete fields

- A remark: Irving Kaplansky tells me that the residue field part of his "Hypothesis A," namely the condition that every polynomial of the form

$$a_0 x^{p^n} + a_1 x^{p^{n-1}} + \cdots + a_{n-1} x^p + a_n x + a_{n+1}$$

  with each a_i in the residue field k have a root in k, was shown by Whaples to be equivalent to the condition that k have no extensions of degree divisible by p. See the "Afterthought" to "Maximal Fields with Valuations" in [1].

Union-closed families

- p. 256, Theorem 1, in condition 2: Change $\mathcal{F} \uplus \mathcal{G} = \mathcal{G}$ to $\mathcal{F} \uplus \mathcal{G} \subseteq \mathcal{G}$. A similar change should be made to the beginning of lines -5 and -3 on p. 257, and to the beginning of line 6 on p. 260. (Thanks to Theresa Vaughan.)

Computational aspects of curves of genus ≥ 2

- In the printed version, "positive integer g" should be changed to "$g \geq 2$" in the statement of the Shafarevich conjecture in Section 11. The statement "For each number field K and set of places S, there are at most finitely many genus-1 curves over K with good reduction outside S" implies that the Shafarevich-Tate group of every elliptic curve over a number field is finite. The latter is not yet proved.

The number of intersection points made by the diagonals of a regular polygon

- The published version contains a typo introduced while texing the manuscript: in Theorem 1, the 232 in the formula for $I(n)$ should be 262, as the routines in ngon.m give. (Thanks to Steve Sommars for noticing this.)

The classification of preperiodic points of quadratic polynomials over $\mathbb{Q}$: a refined conjecture

- The proof of Proposition 1 in Section 4 contains an error: the point $(2, \sqrt{33})$ is not on $\mathcal{C}$! Instead $(-2, \sqrt{33})$ is; apparently a sign got dropped halfway through the computation. To complete the 2-descent correctly one must use also the 2-adic information. The end result of the computation is the same as before, so the main results of the paper still hold. (Thanks to Ken Kramer for noticing the error.)

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Mordell-Lang plus Bogomolov

- In the printed version, Remark 1 following Proposition 5 should be replaced by the following, because heights associated to effective divisors are not guaranteed to be bounded below for points on the divisor itself. (Thanks to Najmuddin Fakhruddin for noticing this.)

  "Condition $(*)$ is satisfied for (U, f) if there exists an integral projective variety V containing U as an open dense subset, and an ample line bundle $\mathcal{L}$ on V such that f extends to a morphism $\overline{f} : V \to V$ and a height associated to $\mathcal{N} := \overline{f}^* \mathcal{L} \otimes \mathcal{L}^{\otimes -q}$ in $(\operatorname{Pic} V) \otimes \mathbf{Q}$ is bounded below for some $1 < q \in \mathbf{Q}$. The condition on $\mathcal{N}$ is satisfied, for instance, if $\mathcal{N}$ is the pullback of an ample sheaf under some morphism of varieties."

  In the application to semiabelian varieties, one can then take $\overline{f} = [m]$ for some $m \geq 2$, $q = m$, and $\mathcal{N} = \mathcal{L}_1^{\otimes (m^2 - m)}$. The results of the paper still hold.

Algebraic families of nonzero elements of Shafarevich-Tate groups

- Section 2.6 implicitly assumes that A is principally polarized, which is the case in the application. If A is a general abelian variety, Y should be a torsor of $\hat{A}$, and it is $\hat{A}$ that should be identified with $\mathbf{Pic}^0_{X/k}$. (Thanks to my co-author for noticing this.)

Squarefree values of multivariable polynomials

The following changes should be made to the printed version:

- In Theorem 3.2 and Lemma 6.2 the condition "x_n appears in $f(x)$" should be strengthened to "x_n appears in each irreducible factor of $f(x)$".
- The statement of Theorem 8.1 is OK, but some changes are needed in the proof, since one cannot ensure that t will be among the t_{i_α} at the end. One should remark that in the generalization of Lemma 7.2 it suffices to have $t_i/t_j \notin K^p$ for some i, j, and then only allow subsets $\{i_{\alpha_1}, \ldots, i_{\alpha_r}\}$ for which the corresponding t_{i_α} satisfy this condition on ratios: this can be done provided $\deg D$ is sufficiently large.

The William Lowell Putnam Mathematical Competition 1986–2000: problems, solutions, and commentary

The "Related question" on page 68 is wrong. Condition (b) should be replaced by the hypothesis that all rows and columns of M have the same sum.

Orbits of automorphism groups of fields

In the printed version, the first paragraph should read as follows:

> By the finiteness hypothesis, $f^m(M - N) = f^{m+r}(M - N)$ for some $m, r \geq 1$. Taking the submodule generated by both sides yields $f^m M = f^{m+r} M$, since the submodule generated by $M - N$ equals M. Applying f repeatedly shows that $f^\ell M = f^{\ell + r} M$ for all $\ell \geq m$. In particular, the decreasing sequence $M, fM, f^2M, \ldots$ is eventually constant.

Thanks to P. K. Sharma for noticing the error.

References

[1] Kaplansky, I., *Selected papers and other writings*, Springer-Verlag, New York, 1995.