LIST OF NOTATIONS

The meanings of letters and symbols will usually be clear from the context. In general, small Latin letters denote rational numbers, small Greek letters denote real or p-adic numbers, and capital Greek letters denote g-adic or g*-adic numbers. By Γ, P, P_p, P_g, and P_{g^*} we mean the fields of rational, real, and p-adic numbers, and the rings of g-adic, and g*-adic numbers, respectively. The symbols

$$|\alpha|, \ |\alpha_0|_p, \ |A|_g, \text{ and } |A^*|_{g^*}$$

stand for the absolute value of the real number α, the p-adic value of the p-adic number α_0, the g-adic value of the g-adic number A, and the g*-adic value of the g*-adic number A^*, respectively.

Here $|\alpha_0|_p$ is normed by the formula

$$|p|_p = \frac{1}{p} .$$

The integer $g \geq 2$ always has the prime factorisation

$$g = p_1^{e_1} \cdots p_r^{e_r} ,$$

where $p_1, \ldots, p_r$ are distinct primes, and $e_1, \ldots, e_r$ are positive integers. If, for $j = 1, 2, \ldots, r$, the g-adic number A has the p_j-adic component α_j, we write

$$A \leftrightarrow (\alpha_1, \ldots, \alpha_r),$$

and then

$$|A|_g = \max\left(|\alpha_1|_{p_1}^{\frac{\log g}{e_1 \log p_1}}, \ldots, |\alpha_r|_{p_r}^{\frac{\log g}{e_r \log p_r}}\right) .$$

Thus, in particular,

$$|g|_g = \frac{1}{g} .$$

A g*-adic number A^* has, in addition to the p_j-adic components α_j, also a real component α. We write

$$A^* \leftrightarrow (\alpha, \alpha_1, \ldots, \alpha_r) = (\alpha, A) \text{ where } A \leftrightarrow (\alpha_1, \ldots, \alpha_r).$$

Then

$$|A^*|_{g^*} = \max(|\alpha|, |A|_g).$$

For rational integers a, b, $m \neq 0$ the congruence $a \equiv b \pmod{m}$ means, as usual, that $a - b$ is divisible by m. Instead of $a \equiv 0 \pmod{m}$ we write $m | a$. The symbol (a, b, ..., f) means the greatest common divisor of the rational integers a, b, ..., f, except on certain occasions when the same symbol is used to denote an ordered set of numbers. If α is a real number, $[\alpha]$ always denotes the integral part of α, i. e. the integer a for which $a \leq \alpha < a + 1$.

A formula like $a \in S$ means that a is an element of the set S. If S_1 and S_2 are sets, $S_1 \cup S_2$ is their union and $S_1 \cap S_2$ their intersection (i.e. $S_1 \cup S_2$ consists of all a that are elements of at least one of the sets, and $S_1 \cap S_2$ of all a that are elements of both sets.) The signs $\bigcup_k S_k$ and $\bigcap_k S_k$ are used for the union and intersection of any number of sets.