Special Notations

Chapter I

$\mathrm{Dm}\,\varphi$	domain of φ 7
$\mathrm{Im}\,\varphi$	image of φ 7
$\varphi(x)\downarrow$	$\varphi(x)$ is defined, $x \in \mathrm{Dm}\,\varphi$ 7
$\varphi(x)\uparrow$	$\varphi(x)$ is undefined, $x \notin \mathrm{Dm}\,\varphi$ 7
$\simeq$	strong equality 7
$\varphi \restriction X$	restriction of φ to X 7
$\varphi''X$	image of X under φ 7
$\varphi : X \to Y$	function from X into Y 7
${}^{X}Y$	total functions $X \to Y$ 7
$x \mapsto y_x$, $\lambda x \,.\, y_x$, $\langle y_x : x \in Z\rangle$	function which assigns y_x to x for each $x \in Z$ 8
ω	set of natural numbers 8
lg	length of a finite sequence 8
$\mathbf{x} \subseteq \mathbf{y}$	$\mathbf{y}$ extends $\mathbf{x}$ 8
$\mathbf{x} * \mathbf{y}$	$\mathbf{x}$ concatenated with $\mathbf{y}$ 8
$\mathbf{x} * \varphi$	$\mathbf{x}$ concatenated with φ 8
$\mathbf{x} \in Z$	$(\forall i < \lg(\mathbf{x}))\ x_i \in Z$ 8
$\varphi(\mathbf{x})$	$(\varphi(x_0), \dots, \varphi(x_{k-1}))$ 8
${}^{k,l}\omega$	${}^{k}\omega \times {}^{l}({}^{\omega}\omega)$ 8
$\mathsf{F}[\mathbf{m}, \boldsymbol{\alpha}]$	$\lambda p \,.\, \mathsf{F}(p, \mathbf{m}, \boldsymbol{\alpha})$ 8
$\sim\mathsf{R}$	complement 8
K_{R}	characteristic functional 9
$\mathsf{Gr}_{\mathsf{F}}, \mathsf{Gr}(\mathsf{F})$	graph 9
${}^{k,l,l'}\omega$	${}^{k}\omega \times {}^{l}({}^{\omega}\omega) \times {}^{l'}({}^{({}^{\omega}\omega)}\omega)$ 9
$\wedge, \vee, \neg, \to, \leftrightarrow, \forall, \exists$	logical symbols 9
$(\exists p < m)$, $(\forall \alpha \in \mathsf{A})$	bounded quantifier 10
$\exists!\, x$	exists exactly one x 10
$\langle \mathbf{m}\rangle, \langle \boldsymbol{\alpha}\rangle$	codes for finite sequences 10
$(\ )_i$	i-th component 10, 11
lg	length 10, 11
$*$	concatenation 10, 11
$\mathrm{Sq}, \mathrm{Sq}_1$	set of sequence codes 10, 11
$(\gamma)^n$	n-th component of a coded infinite sequence 11
ZF (ZFC)	Zermelo-Fraenkel set theory (with axiom of choice) 11
AC	axiom of choice 11
DC	axiom of dependent choice 11
AC_ω	axiom of countable choice 11
Or	class of ordinals 11
$\inf X$	least element of X 11
$\sup X$	least ordinal $\geq$ all elements of X 12
$\sup^+ X$	least ordinal $>$ all elements of X 12
$\mathrm{Lim}\, X$	limit points of X 12
$\mathrm{Card}(X)$	cardinal of X 13
$\aleph_\sigma$	σ-th infinite cardinal 13
$\mathbf{P}(X)$	power-set of X 13
$\mathsf{Fld}(Z), \mathsf{Fld}(\gamma)$	field of the relation Z, $\leqslant_\gamma$ 13, 15
$\lVert Z \rVert, \lVert \gamma \rVert$	order-type of the (pre-)wellordering Z, $\leqslant_\gamma$ 14, 15
$o(X)$	least ordinal not the type of a pre-wellordering of X 14
$\leqslant_\gamma$	binary relation coded by γ 14
W	codes for well-orderings of ω 15, 81
$\gamma \restriction p$	code for initial segment of $\leqslant_\gamma$ 15
$\lvert p \rvert_\gamma$	ordinal represented by p in $\leqslant_\gamma$ 15
$[\mathbf{m}]$	interval determined by $\mathbf{m}$ 16
BIr	binary irrationals 19, 160
mes	Lebesgue measure 20
$\bar{\Gamma}$	set inductively defined by Γ 22
$\Gamma^{(\sigma)}, \Gamma^{\sigma}$	stages of an inductive definition 22
$\lvert \Gamma \rvert$	closure ordinal 23