

Logical and Mathematical Notation

	BESTT	PVS	Oberon	Huth/Ryan	Dr. Khedri
truth values type	*	bool	BOOLEAN	—	B
truth	T	TRUE	TRUE	$T, \top$	true
falsehood	F	FALSE	FALSE	$F, \perp$	false
conjunction	$A \wedge B$	$A \text{ AND } B, A \& B$	$A \& B$	$A \wedge B$	$A \wedge B$
disjunction	$A \vee B$	$A \text{ OR } B$	$A \text{ OR } B$	$A \vee B$	$A \vee B$
negation	$\neg A$	$\text{NOT } A$	$\sim A$	$\neg A$	$\neg A$
implication	$A \supset B, A \Rightarrow B$	$A \text{ IMPLIES } B, A \Rightarrow B$	—	$A \rightarrow B$	$A \Rightarrow B$
iff (biconditional)	$A \equiv B$	$A \text{ IFF } B, A \Leftrightarrow B$	$A = B$	$A \leftrightarrow B$	$A \Leftrightarrow B$
universal quantification	$\forall x : \alpha . A$	$(\text{FORALL}(x : \alpha) : A)$	—	$\forall x A$	$\forall(x \mid \alpha : A)$
existential quantification	$\exists x : \alpha . A$	$(\text{EXISTS}(x : \alpha) : A)$	—	$\exists x A$	$\exists(x \mid \alpha : A)$
equality	$s = t$	$s = t$	$s = t$	$s = t$	$s = t$
inequality	$s \neq t$	$s \neq t$	$s \# t$	$s \neq t$	$s \neq t$
if-then-else	$\text{if}(A, s, t)$	$\text{IF } A \text{ THEN } s \text{ ELSE } t$	—	—	—
functions type	$\alpha \rightarrow \beta$	$\alpha \rightarrow \beta$	—	—	$\alpha \rightarrow \beta$
function application	$f(a_1, \dots, a_n)$	$f(a_1, \dots, a_n)$	$f(a_1, \dots, a_n)$	$f(a_1, \dots, a_n)$	$f(a_1, \dots, a_n)$
function abstraction	$\lambda x : \alpha . t$	$(\text{LAMBDA}(x : \alpha) : t)$	—	—	—
definedness	$t \downarrow$	—	—	—	—
undefinedness	$t \uparrow$	—	—	—	—
equivalence ($s \downarrow \vee t \downarrow \supset s = t$)	$s \simeq t$	—	—	—	$s \stackrel{\Delta}{=} t$
definite description	$\text{I } x : \alpha . A$	—	—	—	—
undefined expression	$\perp, \perp_\alpha$	—	—	—	—
tuples type	$\alpha_1 \times \dots \times \alpha_n$	$[\alpha_1, \dots, \alpha_n]$	—	—	$\alpha_1 \times \dots \times \alpha_n$
tuple	$(a_1, \dots, a_n)$	$(a_1, \dots, a_n)$	—	—	$(a_1, \dots, a_n)$
tuple projection	$\#m(a_1, \dots, a_n)$	$\text{proj_}m(a_1, \dots, a_n)$	—	—	—
lists type	$\text{lists}[\alpha]$	$\text{list}[\alpha]$	—	—	—
list	$[a_1, \dots, a_n]$	$(:a_1, \dots, a_n:)$	—	—	—
empty list	nil	null	—	—	—
list construction	$\text{cons}(a, L)$	$\text{cons}(a, L)$	—	—	—
list head	$\text{hd}(L)$	—	—	—	—
list tail	$\text{tl}(L)$	—	—	—	—
list projection	$L[m]$	—	—	—	—
sets type	$\text{sets}[\alpha]$	$\text{set}[\alpha], \text{setof}[\alpha]$	—	—	$\mathcal{P}(\alpha)$
set	$\{a_1, \dots, a_n\}$	$\{a_1, \dots, a_n\}$	—	$\{a_1, \dots, a_n\}$	$\{a_1, \dots, a_n\}$
set membership	$a \in S$	$\text{member}(a, S), S(a)$	$s \text{ IN } t$	$a \in S$	$a \in S$
set abstraction	$\{x : \alpha \mid A\}$	$\{x : \alpha \mid A\}, (A)$	—	—	$\{x : \alpha \mid A\}$