

Symbol	What it is	How it is read	How it is used	Sample expression
\oint	Line integral sign	The line integral of ...	integration	$\oint \mathbf{F} \cdot d\mathbf{x}$
\iint_S	Surface integral sign	The surface integral of ...	integration	$\iint_S F(x,y,z) dx dy$
\prod	Product sign	The product of ...	Product of three up to infinitely many values	$\prod_{n=1}^{\infty} \frac{1}{n}$
!	Exclamation	... factorial	Product of all positive integers up to a certain value	$5! = 120$
‰	Per mil symbol	... per mil ...	Proportion	$0.032 = 32 \text{ ‰}$
:	Colon, ratio sign	... is to such that it is true that ...	Division or ratio , symbol following logical quantifier or used in defining a set	$2:4 = 20:40$ $\exists x : x > 4 \text{ and } x < 5$ $\forall x : x < 0 \text{ or } x > -1$ $S = \{x : x < 3\}$
	Vertical line	... such thatit is true that ...	Symbol following logical quantifier or used in defining a set	$\exists x x > 4 \text{ and } x < 5$ $\forall x x < 0 \text{ or } x > -1$ $S = \{x x < 3\}$
::	Double colon	... averaged with ...	arithmetic mean	$3 :: 11 = 7$
(]	Hybrid brackets	... the half-open interval ...	Denotes a half-open interval	$(3,5]$
[)	Hybrid brackets	... the half-open interval ...	Denotes a half-open interval	$[3,5)$
{ }	Curly brackets	... the quantity the set ...	Denotes a quantity or a set	$E = \{2, 4, 6, 8, \dots\}$
\exists	Existential quantifier	For some ... There exists a(n) ...	Logical statements	$\exists x : x > 4 \text{ and } x < 5$
\forall	Universal quantifier	For all ... For every ...	Logical statements	$\forall x : x < 0 \text{ or } x > -1$
\neg	Logical negation	not ...	Logical statements	$\neg(\neg A) \iff A$

	symbol			
\implies	logical implication symbol	... implies ... If ... then ...	Logical statements	$A \implies B$
\iff	logical equivalence symbol	... is logically equivalent to if and only if ..	Logical statements	$A \iff B$
\therefore	Three dots	... therefore it follows that ...	Logical statements or mathematical proofs	$x = y$ and $y = z$ $\therefore x = z$
\in	Element-of symbol	... is an element of a set ...	Sets	$a \in A$
\notin	Not-element-of symbol	... is not an element of a set ...	Sets	$b \notin A$
\subseteq	Subset symbol	... is a subset of ...	Sets	$A \subseteq B$
\subset	Proper subset symbol	... is a proper subset of ...	Sets	$A \subset B$
\cup	Union symbol	... union ...	Sets	$A \cup B = B \cup A$
\cap	Intersection symbol	... intersect intersected with ...	Sets	$A \cap B = B \cap A$
\emptyset	Null symbol	The null set The empty set	Sets	$\emptyset = \{ \}$
\aleph	Hebrew aleph (uppercase)	Aleph ...	Transfinite cardinal	$\aleph_1 + \aleph_0 = \aleph_1$
Ω	Greek omega (uppercase)	... omega ...	Volume of an object Ohms (resistance)	$R_2 = 330 \Omega$
\mathbb{N}, \mathbf{N}	Enhanced or bold N	The set of natural numbers	Number theory Set theory	$\mathbb{N} = \{0, 1, 2, 3, \dots\}$
\mathbb{Z}, \mathbf{Z}	Enhanced or bold Z	The set of integers	Number theory Set theory	$\mathbb{Z} = \{0, 1, -1, 2, -2, 3, -3, \dots\}$
\mathbb{Q}, \mathbf{Q}	Enhanced or bold Q	The set of rational numbers	Number theory Set theory	$\mathbb{Q} = \{a/b \mid a \text{ and } b \text{ are in } \mathbb{Z}\}$
\mathbb{R}, \mathbf{R}	Enhanced or bold R	The set of real numbers	Number theory Set theory	What is the cardinality of \mathbb{R} ?