

Table of Algebra Symbols with Examples

Symbol	Symbol Name	Symbol Meaning	Example
x	x Variable	unknown value to find	when $3x = 9$, then $x = 3$
\equiv	Congruence Relation	identical to	$5 \equiv 2 \pmod{3}$
\triangleq	Is Equal By Definition	is equal by definition	$a \triangleq b$
$:\Leftrightarrow$	Is Equal By Definition	is equal by definition	$A:\Leftrightarrow B$
$:=$	Is Equal By Definition	is equal by definition	$a:=b$
\sim	Approximately Equal	is similar to	$\triangle ABC \sim \triangle DEF$ means triangle ABC is similar to triangle DEF.
\approx	Approximately Equal	approximation	$\varphi = \frac{1+\sqrt{5}}{2} \approx 1.6180339887\dots$
\propto	Is Proportional to	is proportional to	$y \propto x$ means, when $y = kx$, k constant
∞	Lemniscate	infinity symbol	$1 / 0 = \infty$
\ll	Much Less Than	$x \ll y$ means x is much less than y .	$0.001 \ll 1000000$
\gg	Much Greater Than	$x \gg y$ means x is much greater than y .	$1000000 \gg 0.001$
$()$	Parentheses	calculate expression inside first	$3 * (3+3) = 18$
$[]$	Brackets	calculate expression inside first	$[(1+1)*(1+1)] = 4$
$\{\}$	Braces	set	$\{\dots, -3, -2, -1, 0, 1, 2, 3, \dots\}$
$\lfloor x \rfloor$	Floor Brackets	rounds number to lower integer	$\lfloor 5.4 \rfloor = 5$
$\lceil x \rceil$	Ceiling Brackets	rounds number to upper integer	$\lceil 5.4 \rceil = 6$
$x!$	Exclamation Mark	factorial	$3! = 1*2*3 = 6$
$ x $	Single Vertical Bar	absolute value	$ -8 = 8$
$f(x)$	Function of x	maps values of x to $f(x)$	$f(x) = 2x+3$
$(f \circ g)$	Function Composition	$(f \circ g)(x) = f(g(x))$	$f(x)=3x, g(x)=x-1 \Rightarrow (f \circ g)(x)=3(x-1)$
(a,b)	Open Interval	$(a,b) = \{x \mid a < x < b\}$	$x \in (3,9)$
$[a,b]$	Closed Interval	$[a,b] = \{x \mid a \leq x \leq b\}$	$x \in [3,9]$

Symbol	Symbol Name	Symbol Meaning	Example
Δ	Delta	change / difference	$\Delta t = t_1 - t_0$
Δ	Discriminant	$\Delta = b^2 - 4ac$	$\Delta = 5^2 - 4(1)(4), = 25 - 16, = 9$
Σ	Sigma	summation - sum of all values in range of series	$\Sigma x_i = x_1 + x_2 + \dots + x_n$
$\Sigma\Sigma$	Sigma	double summation	$\sum_{i=1}^k \sum_{j=1}^m a_{ij} = \sum_{j=1}^m \sum_{i=1}^k a_{ij}$
Π	Capital pi	product - product of all values in range of series	$\Pi x_i = x_1 \cdot x_2 \cdot \dots \cdot x_n$
e	e Constant/ Euler's Number	$e = 2.718281828\dots$	$e = \lim (1+1/x)^x, x \rightarrow \infty$
γ	Euler-Mascheroni constant	$\gamma = 0.527721566\dots$	$\gamma = \lim_{x \rightarrow \infty} \left[\sum_{p \leq x} \ln \left(\frac{1}{1 - \frac{1}{p}} \right) - \ln \ln x \right]$
ϕ	Golden Ratio	golden ratio constant	$\phi = \frac{1 + \sqrt{5}}{2} \approx 1.6180339887\dots$
π	pi Constant	$\pi = 3.141592654\dots$ is the ratio between the circumference and diameter of a circle	$\pi_{\text{Age,Weight}}(\text{Person})$