

# Reading Mathematical Expressions

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**Note:** Some groups of letters are underlined in order to draw one's attention to their pronunciation.

## Basics

$a + b$	$a$ plus $b$
$a - b$	$a$ <u>minus</u> $b$
$a \cdot b$	$ab$ , $a$ times $b$
$\frac{a}{b}$ , $a/b$	$a$ over $b$ , $a$ divided by $b$
$\frac{1}{2}$ , $\frac{1}{3}$ , $\frac{1}{4}$ , $\dots$ , $\frac{1}{10}$	one half, one third, one fourth, ... , one tenth
$\frac{5}{2}$ , $\frac{2}{3}$ , $\dots$ , $\frac{7}{10}$	five halves, two thirds, ... , seven tenths
$a = b$	$a$ equals <u><math>b</math></u> , $a$ is equal to $b$
$a \neq b$	$a$ different from $b$ , $a$ not equal to $b$
$a < b$	$a$ (strictly) less than $b$
$a \leq b$	$a$ less than or equal to $b$
$a > b$	$a$ (strictly) bigger than $b$ , $a$ greater than $b$
$a \geq b$	$a$ greater than or equal to $b$

## Powers and roots

$a^b$	$a$ to the $b$ ,
	$a$ to the $b$ -th (power) [if $b$ is a positive integer]
$x^2$	$x$ squared
$x^3$	$x$ cubed
$x^{-1}$	$x$ inverse
$\sqrt[n]{t}$	$n$ -th root of $t$
$\sqrt{t}$	square root of $t$
$\sqrt[3]{t}$	cubic root of $t$

## Sets

$\emptyset$	(the) empty set
$A \cup B$	$A$ union $B$
$A \cap B$	$A$ intersected with $B$
$A^c$	the complement of $A$
$A \setminus B$	$A$ minus $B$
$A \times B$	$A$ times $B$
$x \in A$	$x$ in $A$ , $x$ belongs to $A$ , $x$ belonging to $A$

## Miscellaneous

5%	five percent
30°	thirty degrees
$x_k$	$x$ $k$
$x_i^j$	$x$ $i$ $j$ [if $j$ is an index, not an exponent!]
$\sum_{k=1}^n k^2$	sum $k$ equals 1 to $n$ of $k^2$ , sum for $k$ (running) from 1 to $n$ of $k^2$ , summation $k$ from 1 to $n$ of $k^2$
$\prod_{k=1}^n \frac{2k+1}{2k+2}$	product $k$ equals 1 to $n$ of $2k + 1$ over $2k + 2$ product for $k$ (running) from 1 to $n$ of $2k + 1$ over $2k + 2$
$n!$	$n$ factorial
partie entière de $x$	integer part of $x$
$ x $	absolute value of $x$ (if $x$ is a real number)
$ z $	modulus of $z$ (if $z$ is a complex number)
$\operatorname{Re}(z)$ , $\operatorname{Im}(z)$	real part of $z$ , imaginary part of $z$
$\ x\ $	norm of $x$
$\langle v, w \rangle$	scalar product of $v$ and $w$
cos sin tan etc.	cosine/cosinus sine/sinus tangent etc.
$\eta$ $\theta$ $\xi$	eta [íta] theta [thíta] xi [ksái]
$\pi$ $\sigma$ $\chi$ $\psi$	pi [pái] sigma [zíigma] chi [kái] psi [sái]
$\mathbb{R}^2$ , $\mathbb{R}^3$ , $\mathbb{R}^n$	$\mathbb{R}$ 2, $\mathbb{R}$ 3, $\mathbb{R}$ $n$
$(\text{blablabla}) \cdot (\text{blbl})$	blablabla, the whole times blbl
$\frac{\text{blablabla}}{\text{blbl}}$	blablabla, the whole divided by blbl
$x_1, \dots, x_n$	$x_1$ up to $x_n$

## Calculus

$f'$	$f$ prime, $f$ dashed
$\frac{d}{dx}$	$d$ by $dx$
$\frac{df}{dx}, \frac{\partial f}{\partial x}$	$df$ by $dx$
$\partial_x f$	$d_x f$ , partial derivative of $f$ with respect to $x$
$\int_a^b f(s) ds$	integral from $a$ to $b$ (of) $f(s) ds$
$\iint_D, \iiint_D$	double integral, triple integral over the domain $D$
$\pm\infty$	plus/minus infinity
$\lim_{x \rightarrow a} f(x)$	(the) limit of $f(x)$ as $x$ tends/goes to $a$ , (the) limit of $f$ of $x$ as $x$ tends/goes to $a$
$\log(x), \log_a x$	logarith <u>m</u> of $x$ , logarith <u>m</u> in base $a$ of $x$
$\exp(x), e^x$	exponential of $x$ , $e$ to the $x$

## Functions

$f : U \rightarrow V$	$f$ from $U$ to $V$
$f(x)$	$f$ of $x$
$x \mapsto f(x)$	$x$ maps to $f(x)$
of class $C^k$	of class $C^k$
of class $C^\infty$	of class $C$ infinity
the Lebesgue spaces $L^p, L^\infty$	the Lebesgue spaces $L^p, L$ infinity
the Sobolev spaces $H^k, W^{k,p}$	the <u>S</u> obolev spaces $H^k, W^k p$