How to pronounce mathematical formulae in English

Last up-dated 7 September 2009, by Dr. Pho Duc Tai

The pronunciations of the most common mathematical expressions are given in the list below. In general, the shortest versions are preferred (unless greater precision is necessary).

N: natural numbers;　**Z**: integers;　**Q**: rational numbers;　**R**: real numbers
∞: infinity

| + | addition; | - | subtraction; | x | multiplication; | $\div$ | division |

$a + b$		a plus b
$a - b$		a minus b
$a \times b$	(or ab)	a multiplied by b; a times b;
$2a$		two (time) a; twice a
$\pm a$		plus or minus a
$\dfrac{x}{y}$	(x/y)	x over y
$\dfrac{1}{2}$	(1/2)	one half; one over two;
$\dfrac{3}{2}$	(3/2)	three halves; three over two
1/3		one third; one over three;
2/3		two thirds; two over three
1/4		one fourths; one over four; a quarter
3/4		three fourths; three over four; three quarters
1/21		one over twenty one; one twenty oneth
2/21		two over twenty one; two twenty oneths;
3/22		three over twenty two; three twenty seconds;
$2\dfrac{2}{3}$		two and two thirds
12.345		twelve point three four five

The square root of 9 is 3.

A) True.
B) False.
C) Who cares?

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Many students actually look forward to Mr. Atwadder's math tests.

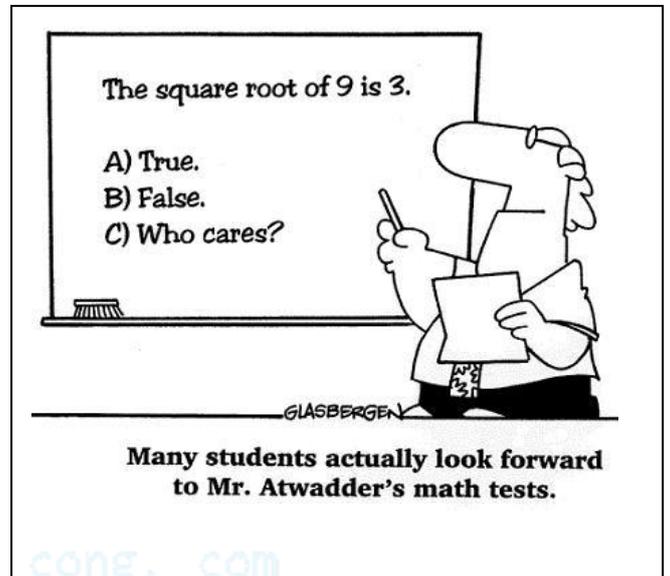|			
$a=b$	a equals [is equal to] b	=	equality
$a \neq b$	a (is) not equal to b ; a does not equal to b	$\neq$	inequality
$a \approx b$	a is approximately [nearly] equal to b		
$a \equiv b$	a is identical to [with] [identically equal to] b		
$a > b$	a is greater [larger] than b; $a \geq b$ a is greater than or equal [not less than] b		
$a < b$	a is less [smaller] than b; $a \leq b$ a is less than or equal [not greater than] b		
$0 < x < 1$	zero is less than x is less than 1		
$0 \leq x \leq 1$	zero is less than or equal to x is less than or equal to 1		
x_n	x (sub) n ; x_0 x (sub) nought [naught; zero];		

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a'	*a* prime; a'' *a* double prime
|a|	absolute value of *a*
a^2	*a* square [squared]; *a* (raised) to the power two
a^3	*a* cube [cubed]; *a* (raised) to the power three
a^4	*a* (raised) to the four [fourth (power)]
a^n	*a* to the *n* [*n*th (power)]; *a* to the power *n*; a^{-n} *a* to the minus *n*
$a^{1/2}$	*a* to the one-half (power); $a^{-1/2}$ *a* to the minus one-half (power)
$\sqrt{a}$	square root of *a*; $\sqrt[3]{a}$ cube [cubic] root of *a*
$\sqrt[4]{a}$	fourth root of *a*
$\sqrt[n]{a}$	*n*th root of *a*
$(x + y)^2$	x plus y all squared; $(x/y)^2$ x over y all squared
$\log_a y$	log *y* to the base *a*; log to the base *a* of *y*
ln y	log *y* to the base *e*; log to the base *e* of *y*; natural log (of) *y*
log x	log (of) *x*; logarithm (of) *x*
$\sum\limits_{i=1}^{n} a_i$	the sum from *i* equals one to *n* of a_i ; the sum as *i* runs from 1 to *n* of the a_i
n!	*n* factorial *(n! =1.2….n)*
P(n,r) or $_nP_r$	permutation of *n* things (taken) *r* at a time $P(n,r) = \dfrac{n!}{(n-r)!}$
C(n,r) or $_nC_r$	combination of *n* things (taken) *r* at a time $C(n,r) = \dfrac{n!}{(n-r)!\,r!}$
X	capital X
$\forall x$	for all x; for any x
$\exists x \dots$	for some x …; there exits an x such that …
$x \in E$	*x* is an element of [belongs to] *E*
$A \subset B$	*A* is contained in *B*; *A* is a subset of *B*;
$A \cup B$	*A* union *B*; *A* cup *B*; union of *A* and *B*
$A \cap B$	*A* intersection *B*; *A* cap *B*; intersection of *A* and *B*
$p \to q$; $p \Rightarrow q$	p implies q; if p then q
$p \leftrightarrow q$; $p \Leftrightarrow q$	p is equivalent to q; p if and only if q; p iff q
f(x)	*fx* ; *f* of *x* ; the function *f* of *x*
f: X →Y	function *f* from *X* into [to] *Y*
f: x↦ y	function *f* mapping *x* to *y*

"Just a darn minute! — Yesterday you said that X equals **two!**"

( ) parentheses;   { } braces;   [ ] brackets

$\frac{2}{3}\big[\{a + b(c-d)\}e\big]$ two thirds open bracket open brace *a* plus *b* open parenthesis *c* minus *d* close parenthesis close brace plus *e* close bracket