17.2.1999/H. Väliaho

Pronunciation of mathematical expressions

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).

1. Logic

$\exists$	there exists
$\forall$	for all
$p \Rightarrow q$	p implies q / if p, then q
$p \Leftrightarrow q$	p if and only if q /p is equivalent to q / p and q are equivalent

2. Sets

$x \in A$	x belongs to A / x is an element (or a member) of A
$x \notin A$	x does not belong to A / x is not an element (or a member) of A
$A \subset B$	A is contained in B / A is a subset of B
$A \supset B$	A contains B / B is a subset of A
$A \cap B$	A cap B / A meet B / A intersection B
$A \cup B$	A cup B / A join B / A union B
$A \setminus B$	A minus B / the difference between A and B
$A \times B$	A cross B / the cartesian product of A and B

3. Real numbers

$x + 1$	x plus one
$x - 1$	x minus one
$x \pm 1$	x plus or minus one
xy	xy / x multiplied by y
$(x - y)(x + y)$	x minus y, x plus y
$\dfrac{x}{y}$	x over y
$=$	the equals sign
$x = 5$	x equals 5 / x is equal to 5
$x \neq 5$	x (is) not equal to 5

$x \equiv y$	x is equivalent to (or identical with) y
$x \not\equiv y$	x is not equivalent to (or identical with) y
$x > y$	x is greater than y
$x \geq y$	x is greater than or equal to y
$x < y$	x is less than y
$x \leq y$	x is less than or equal to y
$0 < x < 1$	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
$\|x\|$	mod x / modulus x
x^2	x squared / x (raised) to the power 2
x^3	x cubed
x^4	x to the fourth / x to the power four
x^n	x to the nth / x to the power n
x^{-n}	x to the (power) minus n
$\sqrt{x}$	(square) root x / the square root of x
$\sqrt[3]{x}$	cube root (of) x
$\sqrt[4]{x}$	fourth root (of) x
$\sqrt[n]{x}$	nth root (of) x
$(x+y)^2$	x plus y all squared
$\left(\frac{x}{y}\right)^2$	x over y all squared
$n!$	n factorial
$\hat{x}$	x hat
$\bar{x}$	x bar
$\tilde{x}$	x tilde
x_i	xi / x subscript i / x suffix i / x sub i
$\sum_{i=1}^{n} a_i$	the sum from i equals one to n a_i / the sum as i runs from 1 to n of the a_i

4. Linear algebra

$\|\|x\|\|$	the norm (or modulus) of x
$\overrightarrow{OA}$	OA / vector OA
$\overline{OA}$	OA / the length of the segment OA
A^T	A transpose / the transpose of A
A^{-1}	A inverse / the inverse of A

5. Functions

$f(x)$	fx / f of x / the function f of x
$f : S \to T$	a function f from S to T
$x \mapsto y$	x maps to y / x is sent (or mapped) to y
$f'(x)$	f prime x / f dash x / the (first) derivative of f with respect to x
$f''(x)$	f double–prime x / f double–dash x / the second derivative of f with respect to x
$f'''(x)$	f triple–prime x / f triple–dash x / the third derivative of f with respect to x
$f^{(4)}(x)$	f four x / the fourth derivative of f with respect to x
$\dfrac{\partial f}{\partial x_1}$	the partial (derivative) of f with respect to x_1
$\dfrac{\partial^2 f}{\partial x_1^2}$	the second partial (derivative) of f with respect to x_1
$\displaystyle\int_0^\infty$	the integral from zero to infinity
$\lim_{x\to 0}$	the limit as x approaches zero
$\lim_{x\to +0}$	the limit as x approaches zero from above
$\lim_{x\to -0}$	the limit as x approaches zero from below
$\log_e y$	log y to the base e / log to the base e of y / natural log (of) y
$\ln y$	log y to the base e / log to the base e of y / natural log (of) y

Individual mathematicians often have their own way of pronouncing mathematical expressions and in many cases there is no generally accepted "correct" pronunciation.

Distinctions made in writing are often not made explicit in speech; thus the sounds fx may be interpreted as any of: fx, $f(x)$, f_x, FX, $\overline{FX}$, $\overrightarrow{FX}$. The difference is usually made clear by the context; it is only when confusion may occur, or where he/she wishes to emphasise the point, that the mathematician will use the longer forms: f multiplied by x, the function f of x, f subscript x, line FX, the length of the segment FX, vector FX.

Similarly, a mathematician is unlikely to make any distinction in speech (except sometimes a difference in intonation or length of pauses) between pairs such as the following:

$$\begin{aligned} x + (y + z) \quad &\text{and} \quad (x + y) + z \\ \sqrt{ax} + b \quad &\text{and} \quad \sqrt{ax + b} \\ a^n - 1 \quad &\text{and} \quad a^{n-1} \end{aligned}$$

The primary reference has been David Hall with Tim Bowyer, Nucleus, English for Science and Technology, Mathematics, Longman 1980. Glen Anderson and Matti Vuorinen have given good comments and supplements.

Tài liệu trên lấy tại www.math.helsinki.fi/engl.pdf .

Sau đây là các bổ xung tại Khoa Toán-Tin , Đại học Khoa học Tự nhiên Tp Hồ Chí Minh

α ['ælfə]
β ['bi:tə]
χ [kai]
δ ['deltə]
ε [ep'sailən]
φ [fai]
γ ['gæmə]
η ['i:tə]
ι [ai'outə]
φ [fai]
κ ['kæpə]
λ ['læmdə]
μ [mju]
ν [nju]
π [pai]
θ [θi:tə]
ρ [rou]
σ ['sigmə]
τ [tou]
ω ['oumigə]
ξ [sai]
ψ [psai]

Δ ['deltə]
Φ [fai]
Γ ['gæmə]
Λ ['læmdə]
Π [pai]
Θ [θi:tə]
Σ ['sigmə]
Ω ['oumigə]
Ψ [psai]

alpha	'ælfə
according	ə'kɔ:diŋ
alpha	'ælfə
also	'ɔ:lsou
analysis	ə'næləsis
analytic	,ænə'litik
antisymmetric	[,ænti'simetrik]
apply	ə'plai
arbitrary	['ɑ:bitrəri]
Archimedean	,ɑ:ki'mi:djən
argument	['ɑ:gjumənt]
assertion	[ə'sə:ʃn]
assumption	ə'sʌmpʃn
asymptotic	,æsimp'tɔti
basis	beisis
because	bi'kɔz
boundary	'baundəri
case	keis
check	tʃek
claim	[kleim]
clear	kliə
closure	['klouʒə]
coincide	,kouin'said
compact	kəm'pækt
compactness	kəm'pæktnis
complete	kəm'pli:t
completely	kəm'pli:tli
conclusion	kən'klu:ʒn
condition	kən'diʃn
consequent	'kɔnsikwənt
consequently	['kɔnsikwəntli]
consider	kən'sidə
contain	kən'tein
continuity	,kɔnti'nju:iti
continuous	[kən'tinjuəs]
continuously	kən'tinjuəsli
contradict	,kɔntrə'dikt
contradiction	,kɔntrə'dikʃn
converge	kən'və:dʒ
converging	[kən'və:dʒiŋ]
conversely	kən'və:sli
convex	[kɔn'veks]
corresponding	,kɔris'pɔndiŋ
counter-example	'kauntəig,zæmpl
define	di'fain
definition	,defi'niʃn
delta	'deltə
delta	'deltə
denote	[di'nout]
determine	di'tə:min
determined	di'tə:min
discuss	dis'kʌs
domain	dou'mein
dual	'dju:əl
eigenvalue	aigən'vælju:
eigenvector	aigən'vektə
element	'elimənt
empty	'empti
endomorphism	,endou'mɔ:fism
epsilon	ep'sailən
equation	i'kweiʃn
equivalent	i'kwivələnt
Euclid	['ju:klid]
example	[ig'zɑ:mpl]
exist	[ig'zist]
fixed	fikst
follow	'fɔlou
generality	,dʒenə'ræliti
generate	'dʒenəreit
generating	'dʒenəreitiŋ
homomorphism	,hɔmə'mɔ:fizm
however	hau'evə
hypotheses	[hai'pɔθisi:z]
imbed	im'bed
imply	im'plai
increasing	in'kri:siŋ
Indeed	in'di:d
induction	in'dʌkʃn
inequality	,ini:'kwɔliti
infer	in'fə:
infinite	infinit
infinity	in'finiti
injection	in'dʒekʃn
integer	'intidʒə
interior	in'tiəriə
interior	[in'tiəriə]

interior	in'tiəriə
interior	in'tiəriə
interval	'intəvəl
inverse	in'və:s
inversely	in'və:sli
invertible	in'və:təbl
isomorphic	,aisou'mɔ:fik
iteration	[,itə'reiʃn]
iterative	['itərətiv]
lambda	'læmdə
least	li:st
lemma	lemə
limit	'limit
linear	'liniə
map	mæp
maximal	['mæksiml]
maximum	'mæksiməm
minimal	['miniml]
monotone	'mɔnətoun
moreover	mɔ:'rouvə
natural	'nætʃrəl
norm	nɔ:m
normal	['nɔ:məl]
normality	nɔ:'mæliti
note	nout
observe	[ə'bzə:v]
obtain	əb'tein
omega	'oumigə
operator	ɔpəreitə
original	ə'ridʒənl
point	pɔint
positive	'pɔzətiv
preceding	'presidiŋ
previous	['pri:viəs]
principle	['prinsəpl]
problem	'prɔbləm
property	'prɔpəti
prove	pru:v
radius	'reidiəs
reflexive	ri'fleksiv
remark	ri'mɑ:k
resonance	'reznəns
respect	ri'spekt
respectively	[ris'pektivli]
reverse	ri'və:s
satisfy	sætisfai
scheme	[ski:m]
sequence	'si:kwəns
show	ʃou
sigma	'sigmə
similar	'similə
simple	'simpl
solution	sə'lu:ʃn
space	'speis
special	speʃl
spectral	'spektrəl
standard	'stændəd
statement	'steitmənt
step	step
strictly	'striktli
style	stail
subsequence	sʌbsikwəns
subsequence	'sʌbsikwəns
subset	['sʌbset]
suffice	[sə'fais]
suppose	sə'pouz
supposition	,sʌpə'ziʃn
system	'sistəm
theorem	'θiərəm
theory	θiəri
therefore	'đeəfɔ:
thus	đʌs
total	toutl
totally	'toutəli
transitive	trænzətiv
unbounded	,ʌn'baundid
under	'ʌndə
unique	[ju:'ni:k]
unit	'ju:nit
vector	['vektə]
wedge	wedʒ
whenever	wen'evə
zero	'ziərou