# APPENDIX 1

## GREEK ALPHABET

| Letters | | Name | Pronun. |
| --- | --- | --- | --- |
| Capital | Small | | |
| A | α | alpha | 'ælfə |
| B | β | beta | 'bi:tə |
| Γ | γ | gamma | 'gæmə |
| Δ | δ | delta | 'deltə |
| E | ε | epsilon | 'epsilən |
| Z | ζ | zeta | 'zi:tə |
| H | η | eta | 'i:tə |
| Θ | θ | theta | 'θi:tə |
| I | ι | iota | ai'əutə |
| K | κ | kappa | 'kæpə |
| Λ | λ | lambda | 'læmbdə |
| M | μ | mu | mju: |

| Letters | | Name | Pronun. |
| --- | --- | --- | --- |
| Capital | Small | | |
| N | ν | nu | nju: |
| Ξ | ξ | xi | ksai |
| O | o | omicron | 'əumikrən |
| Π | π | pi | pai |
| P | ρ | rho | rəu |
| Σ | σ | sigma | 'sigmə |
| T | τ | tau | tau |
| Y | υ | upsilon | 'jupsilən |
| Φ | φ | phi | fai |
| X | χ | chi | kai |
| Ψ | ψ | psi | psai |
| Ω | ω | omega | 'əumigə |

## HOW TO READ MATHEMATICAL EXPRESSIONS

### Fundamental symbols

| | |
| --- | --- |
| $=$ | equals; is equal to |
| $\neq$ | is not equal to; does not equal |
| $\equiv$ | is identical with; is always equal to |
| $\cong$ ; $\approx$ | is approximately equal to; approximately equals |
| $>$ | is greater than |
| $<$ | is less than |
| $\leq$ | is less than or equal to; is not greater than |
| $\geq$ | is greater than or equal to; is not less than; is more than or equal to |
| $!$ | factorial ($a!$ – $a$ factorial; factorial $a$) |
| $\sim$ ; $\propto$ | is (directly) proportional to; varies as |
| $m_a$ | $ma$; $m$ sub (script) $a$ |
| $x_{ij}$ | $x$ $ij$; $x$ with the indices $ij$ |
| $x'$ | $x$ prime; $x$ dashed |
| $x''$ | $x$ double-prime; $x$ double-dashed |
| $x*$ | $x$ star; $x$ asterisk |
| $\bar{a}$ | $a$ bar |
| $\tilde{a}$ | $a$ tilde |
| $\hat{a}$ | $a$ hat; $a$ roof |
| $\ddot{a}$ | $a$ double dot |
| $\lvert a \rvert$ | the absolute value of $a$; modulus $a$ |
| $\%$ | per cent |
| $\infty$ | infinity |
| $(\ )$ | parentheses; round brackets |
| $[\ ]$ | brackets; square brackets |
| $\{\ \}$ | braces; curly brackets |
| $\langle\ \rangle$ | angle brackets |
| $(\ ]$ | hybrid brackets |

$(x; y)$         (the) ordered pair $(x; y)$

## Combinatorics

$V_k(n)$         *k* variations of *n* things/ objects/ entities

$C_k(n)$         *k* combinations of *n* things/ objects/ entities

$P(n)$         *n* permutations

$V'_k(n)$         *k* variations of *n* things/ objects/ entities with repetition

$C'_k(n)$         *k* combinations of *n* things/ objects/ entities with repetition

$P'(k_1, k_2, k_3, ..., k_n)$     multiset permutation; multinomial coefficient

$\binom{n}{k}$         *n* choose *k*; binomial *n* over *k*; the *k*th binomial coefficient of the *n*th degree

## Mathematical Logic

$X \wedge Y$         *X* and *Y* (conjunction of statements *X* and *Y*)
$X \vee Y$         *X* or *Y* (alternative of statements *X* and *Y*)
$X \Rightarrow Y$         *X* implies *Y* (implication)
                    *Y* follows from *X*
                    if *X* holds then *Y* also holds
                    *X* is the sufficient condition for *Y*
                    *Y* is the necessary condition for *X*
$X \Leftrightarrow Y$         *X* is equivalent to *Y* (equivalence)
                    *X* holds if and only if *Y* holds
                    *X* is the necessary and sufficient condition for *Y*
$\forall$         for all; the universal quantifier ($\forall x \in I : V(x)$ – for each $x \in I$ the statement $V(x)$ holds)
$\exists$         there exists; the existential quantifier ($\exists x \in I : V(x)$ – there exists $x \in I$ such that the statement $V(x)$ holds
$\therefore$         therefore
$\because$         because
$\neg X$         (the) negation (of) *X*
$X'$         (the) negation (of) *X*
1, 0         truth value; logical value
1         true
T         true
0         false
▲         false

## Sets

$x \in A$         *x* is an element of *A*; *x* lies in *A*
                    *x* belongs to *A*
                    *x* is a member of *A*
$x \notin A$         *x* is not an element of *A*; *x* does not lie in *A*
                    *x* does not belong to *A*
                    *x* is not a member of *A*
$A = \{a,b,c\}$         *A* is the set with the elements *a, b, c*
$A \subset B$         *A* is included in *B*
                    *A* is contained in *B*
                    *A* is a (proper) subset of *B*

| | |
|---|---|
| $A = \varnothing$ | *A* is an empty set |
| | *A* is a null set |
| $A \cup B$ | the union of *A* and *B*; *A* union *B* |
| $A \cap B$ | the intersection of *A* and *B*; *A* intersection *B* |
| $A \subseteq B$ | *A* is a subset of *B* |
| $A \sim B$ | *A* and *B* are equivalent to each other |
| $(a, b)$ | the open interval *a b*/ with the end points *a*, *b* |
| $[a, b]; \langle a, b \rangle$ | the closed interval *a b* |
| $(a, b]; (a, b\rangle$ | half-open/ semi-open interval *a b*, open on the left and closed on the right |
| $X = (-\infty, +\infty)$ | Capital *X* equals the open interval minus infinity, plus infinity. |
| $\displaystyle\bigcup_{a \in A} S_a$ | (the) union of all sets *M* sub $\alpha$; $\alpha \in A$ |
| $\displaystyle\bigcap_{a \in A} S_a$ | (the) intersection of all sets *M* sub $\alpha$; $\alpha \in A$ |
| $A \times B$ | the Cartesian product of *A* and *B*; *A* cross *B* |
| $A'_B$ | the relative complement of (a set) *A* with respect to (a set) *B* |
| $A\backslash B$ | the (set-theoretic) difference of *A* and *B* |

## Addition

| summands | sum |
|---|---|
| sčítance | součet |

$$4 + 7 = 11$$

Four plus seven equals eleven.
Four plus seven is equal to eleven.
Four added to seven makes eleven.
Four and seven is/ are eleven.
Eleven is the sum of four and seven.
(or almost any combination of these, e.g.: Four and seven equals eleven.)

| | |
|---|---|
| $a + b = c$ | *a* plus *b* equals *c*. |
| $a_1 + a_2 = s$ | *a* one plus *a* two equals *s*. |

## Subtraction

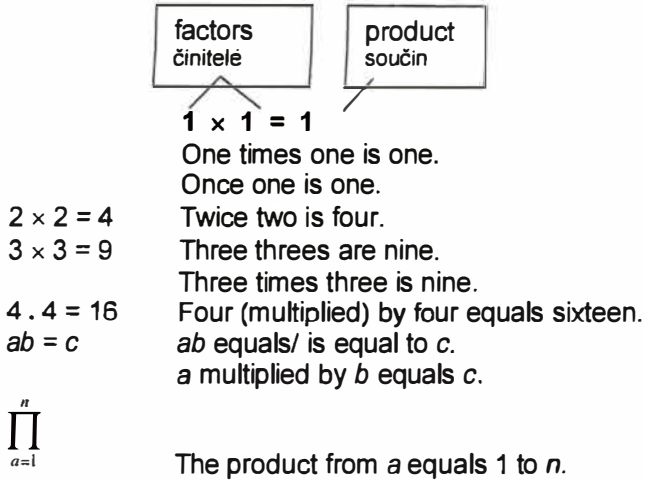| minuend | subtrahend | difference |
|---|---|---|
| menšenec | menšitel | rozdíl |

$$11 - 4 = 7$$

Eleven minus four equals seven.
Four from eleven leaves seven.
Eleven diminished by four is equal to seven.
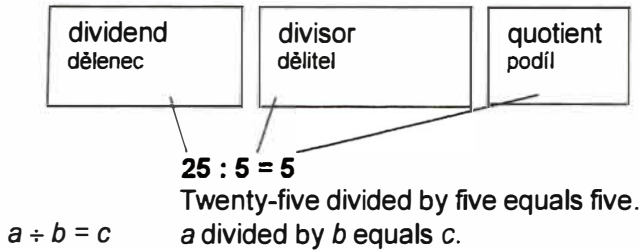Seven is the difference of eleven and four.

| | |
|---|---|
| $a - b = c$ | *a* minus *b* equals *c*. |

### *Multiplication*

| factors | product |
|---|---|
| činitelé | součin |

$$1 \times 1 = 1$$

One times one is one.
Once one is one.

$2 \times 2 = 4$      Twice two is four.

$3 \times 3 = 9$      Three threes are nine.
                   Three times three is nine.

$4 \cdot 4 = 16$     Four (multiplied) by four equals sixteen.

$ab = c$      *ab* equals/ is equal to *c*.
                  *a* multiplied by *b* equals *c*.

$$\prod_{a=1}^{n}$$

The product from *a* equals 1 to *n*.

### *Division*

| dividend | divisor | quotient |
|---|---|---|
| dělenec | dělitel | podíl |

$$25 : 5 = 5$$

Twenty-five divided by five equals five.

$a \div b = c$      *a* divided by *b* equals *c*.

### *Fractions*

*Common (vulgar) fractions:*

| numerator | | quotient |
|---|---|---|
| čitatel | | podíl |

| denominator | |
|---|---|
| jmenovatel | |

$$\frac{a}{b} = c$$
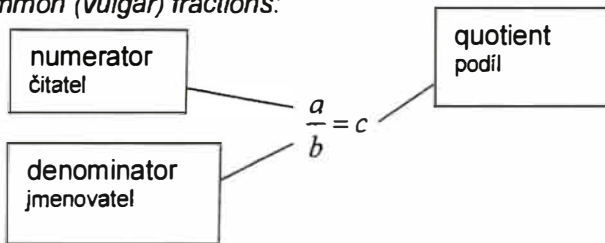
$\dfrac{1}{2}$          one half (a half)

$1/3$           one third (a third)

$2/9$           two ninths

$4\dfrac{5}{8}$        four and five eighths
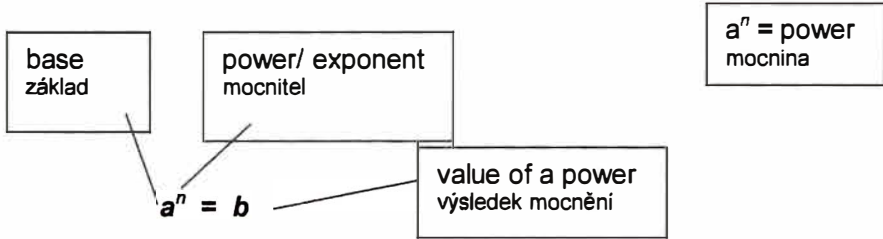
$\dfrac{a}{b}$          *a* over *b*.

$\dfrac{a+b}{a-b} = \dfrac{c+d}{c-d}$    *a* plus *b* over *a* minus *b* equals *c* plus *d* over *c* minus *d*.

(You should avoid saying this except where it was visible to the listener: if you had to say it "unseen", you should pause to avoid ambiguity. – *a* plus *b* over *(pause) a* minus *b* equals *c* plus *d* over *(pause) c* minus *d*.

*Decimal fractions:*

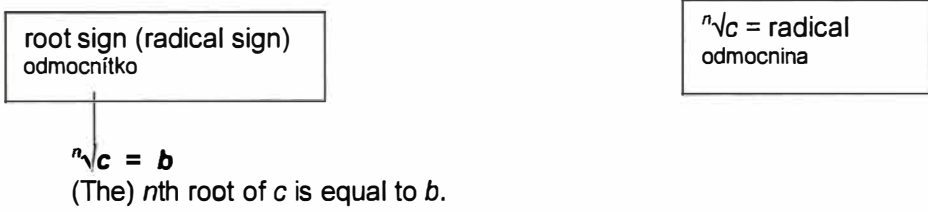| | |
|---|---|
| 0.523 | nought point five two three |
| | zero point five two three |
| | point five two three |
| | oh [əu] point five two three |
| 23.25 | twenty-three point two five |
| 0.002 | oh point oh oh two |
| | point two ohs two |
| | point double-oh-two |
| | point nought nought two |
| 2.6666666666 | two point six recurring |
| 2.612361236123 | two point six one two three recurring |

## Powers / Exponentiations

| base | power/ exponent |
|---|---|
| základ | mocnitel |

$a^n$ = power
mocnina

value of a power
výsledek mocnění

$a^n = b$

a to the *n* equals *b*.
a to the *n*th equals *b*.
a to the *n*th (or *n*-th) power is equal to *b*.
a (raised) to the power (of) *n* is equal to *b*.
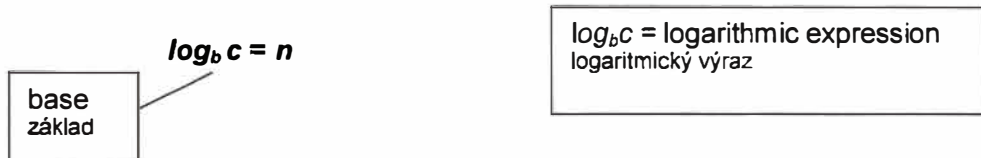The *n*th power of a is equal to *b*.

| | |
|---|---|
| $3^2$ | three squared (square) |
| | three (raised) to the second power |
| | three to the power of two |
| | the second power of three |
| $5^3$ | five cubed (cube) |
| | the cube of five |
| | five (raised) to the third power |
| | five to the power of three |
| | the third power of five |
| $10^7$ | ten to the seven |
| | ten to the seventh power |
| $10^{-7}$ | ten to the minus seven |
| $a^{-10}$ | a to the minus tenth; to the power minus ten |
| $a^2$ | a squared; the square of a |
| $a^n$ | a to the (power) *n* ; to the *n*th (power); the *n*th power of a |
| $(x + y)^2$ | x plus y all squared |

## Roots

| root sign (radical sign) |
|---|
| odmocnítko |

$\sqrt[n]{c}$ = radical
odmocnina

$\sqrt[n]{c} = b$
(The) *n*th root of *c* is equal to *b*.

$\sqrt{4} = 2$       The (square) root (of) four is two.

$\sqrt{a}$       root $a$; the square root $a$; the square root of $a$

$\sqrt[3]{a}$       the cube root (of) $a$

$\sqrt[4]{16}$       the fourth root (of) sixteen

$\sqrt[5]{a^7}$       the fifth root out of $a$ to the power seven

$\sqrt[n]{a}$       the $n$th root of $a$

$\sqrt[n]{c^m}$       the $n$th root of $c$ to the $m$th

## Logarithms

$$\boldsymbol{log_b\, c = n}$$

base
základ

$log_b c$ = logarithmic expression
logaritmický výraz

The logarithm to the base $b$ of $c$ is equal to $n$.
The logarithm (of) $c$ to/ with the base $b$ is equal to $n$.

*ln c*       the natural logarithm of $c$
*log c; lg c*       the (common) logarithm of $c$; log-ten $c$
$log_2 a$       the logarithm (of) $a$ to the base two
$log\, x_1 x_2$       the logarithm (of) $x$ one $x$ two
$log\, x^n$       the logarithm (of) $x$ to the power $n$

## Matrices and Determinants

$A_{m,n}$       $m$ by $n$ matrix

$A_{[m,n]}$       $m$ by $n$ matrix

$A^T$       the transpose of a matrix A

$\begin{pmatrix} a & b \\ c & d \end{pmatrix}$       a two-by-two matrix, the first row is $a$, $b$, the second row is $c$, $d$

$\begin{pmatrix} a_{11} & a_{12} & b_{12} \\ a_{21} & a_{22} & b_{21} \end{pmatrix}$       two-by-three matrix

$A = \begin{pmatrix} 1 & 1 & 1 \\ 0 & 1 & 1 \\ 0 & 0 & 1 \end{pmatrix}$       upper-triangular three-by-three matrix

$|A| = 1$       the determinant of $A$ equals 1

$M_{12} = \begin{vmatrix} 0 & 1 \\ 0 & 1 \end{vmatrix}$       the minor of the entry $a_{12}$

$A_{12} = (-1)^{1+2} M_{12}$   the cofactor of the entry $a_{12}$; the $(i,j)$th cofactor of $A$

## Calculus

$D_f$       the defintition domain of (the function) $f$

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| | |
|---|---|
| $R_f$ | the range of (the function) $f$ |
| $g(f(x))$ | the composition of (the functions) $g$ and $f$; $g$ composed with $f$ |
| $g \circ f$ | the composition of (the functions) $g$ and $f$; $g$ composed with |
| $x \to a+$ | $f$ $x$ approaches $a$ from the right |
| $U_\delta(x_0)$ | the δ neighbourhood of $x$ sub 0 |
| $U_\delta^+(x_0)$ | the right-hand δ neighbourhood of $x$ sub 0 |
| $P_\delta^+(x_0)$ | the reduced right-hand δ neighbourhood of $x$ sub 0 |
| $|x|$ | the entire part of $x$ |
| sgn $x$ | the sign of $x$ |
| $f(A)$ | the image of $A$ under $f$ |
| $f_{-1}(A)$ | the inverse image of $A$ under $f$ |
| $f : X \to Y$ | $f$ is a mapping of $X$ into $Y$; $f$ maps $X$ into $Y$ |
| $f : X \overset{onto}{\to} Y$ | $f$ is a mapping of $X$ onto $Y$; $f$ maps $X$ onto $Y$ |
| $x \to x_0$ | $x$ approaches $x$ nought |
| | $x$ tends to $x$ nought |
| $\lim_{x \to x_1} f(x) = L$ | As $x$ tends to one, $f$ of $x$ tends to $L$. |
| | The limit of $f$ of $x$ as $x$ tends to $x$ one is capital $L$. |
| $\lim_{a \to \infty} a_n = 0$ | The limit of $a$ sub $n$ is zero as $a$ tends to/ approaches infinity. |
| $\sum_{i=1}^{n}$ | the sum from $i$ equals one to $n$ |
| $y = \sum_{k=0}^{4} a_k x^k$ | $y$ equals the sum of $a$ (sub) $k$, $x$ to the power of $k$, (taken) from (or over) |
| | ($k$ equal to) zero to ($k$ equal to) four. |
| $\int$ | the (indefinite) integral |
| $\iint$ | the double integral |
| $\iiint$ | the triple integral |
| $\int_a^b$ | the integral from $a$ to $b$ |
| | the (definite) integral between the values $a$ and $b$ |
| $\int f(x)\,dx$ | the integral of (small/ function) $f$ of $x$ d $x$ |
| $d$ | the differential |
| $df$ | the differential of function $f$ |
| $y = f(x)$ | $y$ is equal to $f$ of $x$. |
| | $y$ is equal to $fx$. |
| | $y$ is equal to the function $f$ of $x$. |
| $f'(x)$ | $f$ prime of $x$. |
| | the (first) derivative of (function) $f$ with respect to $x$ |
| $f''(x)$ | $f$ double-prime of $x$. |
| | the second derivative of $f$ with respect to $x$ |
| $f'''(x)$ | $f$ triple-prime of $x$. |
| | $f$ treble-dash $x$. |
| | the third derivative of $f$ with respect to $x$ |

$f^{(4)}(x)$          f four of x
                the derivative of the fourth order of function f
                the fourth derivative of f with respect to x

$\dfrac{\partial v}{\partial \theta}$       the partial derivative of v with respect to θ

$\dfrac{\partial^2 v}{\partial \theta^2}$       d two v by d theta squared
                the second partial derivative of v with respect to θ *squared*

### *Trigonometric functions*

| | |
|---|---|
| $y = \sin x$ | y equals sine x; y equals the sine of x. |
| $y = \cos x$ | y equals cos x; y equals the cosine of x. |
| $y = \tan x$ | y equals tan x; y equals the tangent of x. |
| $y = \cot x$ | y equals cot x; y equals the cotangent of x. |
| $y = \arcsin x$ | y equals the inverse sine of x. |
| | y equals the arc sine of x. |
| | y equals the angle whose sine is x. |

### *Equations*

| | |
|---|---|
| $x + 7 = 3 - x$ | a linear equation |
| $x$ | unknown |
| $x = 5$ | the solution/ the root of the equation |
| $ax^2 + bx + c = 0$ | a quadratic equation; the standard form of the quadratic equation |
| $D = b^2 - 4\,ac$ | a discriminant |
| $ax^3 + bx^3 + cx + d = 0$ | a cubic equation |
| $x + y = 2;\ 2x - y = 5$ | a system of two (linear) equations |
| $x + 2 \geq 5 + 2x$ | an inequality for the unknown x/ involving the unknown x |
| $\pi < 5$ | an inequality |

$$\begin{aligned} x + y &= 2 \\ x + y &= 4 \end{aligned}$$
inconsistent system of two linear equations in two unknowns

$$\begin{aligned} x + y &= 2 \\ x + 2y &= 4 \end{aligned}$$
consistent system of two linear equations in two unknowns

$$\begin{aligned} x + y &= 2 \\ x + 2y &= 4 \\ 2x + y &= 1 \end{aligned}$$
overdetermined system of linear equations

$$\begin{aligned} x + y + z &= 2 \\ x + y + z &= 4 \end{aligned}$$
underdetermined system of linear equations

# APPENDIX 2

## *WEIGHTS AND MEASURES*

### BRITISH CONVERSION FACTORS

**Weight**

| | | | |
|---|---|---|---|
| 1 grain | = | 0.065 | g |
| 1 drachm | = | 1.77 | g |
| 1 ounce (oz) | = | 28.35 | g |
| 1 pound (lb) = 16 oz | = | 453.6 | g |
| 1 stone = 14 lb | = | 6.35 | kg |
| 1 hundredweight (cwt) = 112 lb | = | 50.8 | kg |
| 1 ton = 20 cwt | = | 1.016 | tonne |

**Liquid measure**

| | | | |
|---|---|---|---|
| 1 minim | = | 0.059 | ml |
| 1 fluid drachm | = | 3.55 | ml |
| 1 fluid ounce (vol. of 1 oz water) | = | 28.40 | ml |
| 1 pint (pt) = 20 fl oz | = | 568.00 | ml |
| 1 quart (qt) = 2 pt | = | 1.14 | l |
| 1 gallon = 8 pt | = | 4.55 | l |
| | | (1.201 U.S. gallon) | |

**Length**

| | | | |
|---|---|---|---|
| 1 inch (in) | = | 2.54 | cm |
| 1 foot (ft) = 12 in | = | 0.305 | m |
| 1 yard (yd) = 3 ft | = | 0.9144 | m |
| 1 mile = 1760 yd | = | 1.61 | km |
| 1 nautical mile (6080 ft) | = | 1.85 | km |

**Area**

| | | | |
|---|---|---|---|
| 1 square inch ($in^2$) | = | 6.452 | $cm^2$ |
| 1 square foot ($ft^2$) | = | 0.093 | $m^2$ |
| 1 square yard ($yd^2$) | = | 0.836 | $m^2$ |
| 1 acre = 4840 $yd^2$ | = | 0.404 | hectare |

**Volume**

| | | | |
|---|---|---|---|
| 1 cubic inch ($in^3$) | = | 16.39 | $cm^3$ |
| 1 cubic foot ($ft^3$) | = | 0.0283 | $m^3$ |
| 1 cubic yard ($yd^3$) | = | 0.765 | $m^3$ |

**Speed and M.P.G.**

| | | | |
|---|---|---|---|
| 60 miles/ hour (m.p.h.) = 88 ft/ sec | = | 96.6 | km/h |
| 1  knot = 1 nautical mile/ hour | = | 1.85 | km/h |
| 30 miles/ gallon | = | 10.6 | km/litre |
| | | (9.4 litre / 100 km) | |

**Thermometer**

| Fahrenheit | Centigrade |
|---|---|
| 212 | 100 |
| 194 | 90 |
| 176 | 80 |
| 158 | 70 |
| 140 | 60 |
| 122 | 50 |
| 113 | 45 |
| 107.6 | 42 |
| 105.8 | 41 |
| 104.0 | 40 |
| 102.2 | 39 |
| 100.4 | 38 |
| 98.6 | 37 |
| 96.8 | 36 |
| 95 | 35 |
| 86 | 30 |
| 77 | 25 |
| 68 | 20 |
| 59 | 15 |
| 50 | 10 |
| 41 | 5 |
| 32 | 0 |
| 23 | −5 |
| 14 | −10 |

# APPENDIX 3

## *ABBREVIATIONS*

| | |
|---|---|
| ab init. (ab initio) | – from the beginning |
| abbr. | – abbreviate; abbreviation |
| ad inf. (ad infinitum) | – to infinity |
| adj | – adjugate of a matrix |
| alt | – altitude |
| an. (ante) | – before |
| app. | – appendix |
| approx. | – approximate(ly) |
| arg | – argument |
| at. ppm | – atomic parts per million |
| atm | – atmosphere |
| AU | – astronomical unit |
| c. / cca (circa) | – about, around, approximately |
| c.c. | – complex conjugate |
| calc | – calculated (in subscript) |
| Card | – cardinality of a set |
| cdf | – cumulative distribution function |
| cf. (conferre) | – compare to, see also |
| Cl | – topological closure |
| $cm^3$ | – cubic centimetre |
| cod / codom | – codomain |
| coeff | – coefficient (in subscript) |
| colog | – cologarithm |
| const | – constant |
| cu | – cubic |
| curl / rot | – curl of a vector field |
| dB, dBm | – decibel |
| defn | – definition |
| deg | – degree |
| det | – determinant |
| dev | – deviation |
| diam | – diameter |
| dim | – dimension of a vector space |
| div | – divergence |
| DNE | – a solution for an expression does not exist, or is undefined. Generally used with limits and integrals. |
| dom | – domain of a function |
| dtto (detto) | – the same |

| | | |
|---|---|---|
| $e$, exp | – | exponential |
| e.g. (exempli gratia) | – | for example |
| e.u. | – | electron unit |
| emf, EMF | – | electromotive force |
| Eq. (pl. – Eqs)/Eqn | – | equation |
| et al. (et alii) | – | and the others |
| etc. (et cetera) | – | and so on |
| eu | – | entropy unit |
| expr | – | expression |
| ext | – | exterior |
| F | – | Faraday constant |
| f. (pl. – ff.) | – | following |
| fcn | – | function |
| Fig. (pl. – Figs.) | – | figure |
| FOL | – | first-order logic |
| G | – | gauss |
| G | – | gravitational constant |
| gcd | – | greatest common divisor of two numbers |
| glb | – | greatest lower bound |
| grad | – | gradient of a scalar field |
| h | – | Planck constant |
| hcf | – | highest common factor of two numbers |
| i.d. | – | inside diameter |
| i.e. (id est) | – | that is, in other words |
| ib., ibid. (ibidem) | – | in the same place |
| iff | – | if and only if |
| Im | – | *either* image of a function *or* imaginary part of a complex number |
| inc. | – | included, including |
| ineq | – | inequality |
| inf | – | infimum of a set |
| int | – | interior |
| iq (idem quod) | – | the same as |
| ir, IR | – | infrared |
| K | – | degrees Kelvin |
| kbar | – | kilobar |
| Ker | – | kernel |
| l.c./ loc. cit. (loco citato) | – | in the passage quoted |
| lb | – | pound |
| lcm | – | lowest common multiple of two numbers |
| lg | – | common or binary logarithm |

| | | |
|---|---|---|
| LHS | – | left-hand side of an equation |
| Li | – | offset logarithmic integral function |
| li | – | logarithmic integral function or linearly independent |
| lim | – | limit of a sequence, or of a function |
| lim inf | – | limit inferior |
| lim sup | – | limit superior |
| ln | – | natural logarithm |
| log | – | logarithm |
| logh | – | natural logarithm |
| lub/ sup | – | least upper bound |
| max | – | maximum of a set |
| min | – | minimum |
| min | – | minute |
| min | – | minimum of a set |
| mod | – | modulo |
| mol | – | mole |
| mx | – | matrix |
| No (numero) | – | number |
| NOR | – | not-or in logic |
| o.d. | – | outside diameter |
| op. cit. (opere citato) | – | in the work cited |
| opn | – | operation |
| ord | – | ordinal number |
| p.a. / pa / per an. per annum) | – | yearly |
| p.c. (per cent) | – | percent |
| pf | – | proof |
| ppm | – | parts per million |
| Pr | – | probability of an event |
| pro tem. (pro tempore) | – | for the time being |
| psi | – | pounds per square inch |
| q.v. (quod vide) | – | which see, go and look it up if you are interested |
| qe (quod est) | – | which is |
| QED (Quod erat demonstradum) | – | used at the end of a definitive proof |
| QEF (Quod erat faciendum) | – | used at the end of a construction |
| ran | – | range of a function |
| Re | – | real part |
| Re | – | real part of a complex number |
| resp | – | respectively |
| RHS | – | right-hand side of an equation |
| Rk | – | rank |
| rms | – | root-mean-square |

| | |
|---|---|
| rpm | – revolutions per minute |
| RTP | – required to prove |
| s, sec | – second |
| Soln | – solution |
| Sp | – linear span of a set of vectors |
| sq | – square |
| st | – such that or so that |
| STP | – (it is) sufficient to prove |
| sup | – supremum of a set |
| TFAE | – the following are equivalent |
| Thm / thm | – theorem |
| tot | – total (in subscript) |
| TP | – temperature-pressure |
| u | – atomic mass unit |
| v. (vide) | – see |
| v.s. (vide supra) | – see above |
| v.v. (vice versa) | – vice versa/ in the opposite order |
| viz (videlicet) | – namely, that is to say |
| vs. (versus) | – against, in contrast to |
| walog | – without any loss of generality |
| wff | – well-formed formula |
| wlog | – without loss of generality |
| WMA | – we may assume |
| WO | – well-ordered set |
| wrt | – with respect to/ with regard to |
| WTP | – want to prove |
| WTS | – want to show |
| XOR | – exclusive or (in logic) |

# APPENDIX 4

## *ENGLISH - CZECH DICTIONARY*

**A**

| | | |
|---|---|---|
| abscissa (pl. absissae) | [æb'sisə/ əb'sisi:] | úsečka; souřadnice |
| add | [æd] | přičíst |
| addition | [ə'dišən] | sčítání |
| adjacent | [ə,džeisənt] | přilehlý |
| algebra | [ældžibrə] | algebra |
| algebraic | [ældži'breik] | algebraický |
| altitude | [æltitju:d] | výška Δ |
| analogous | [ənæləgəs] | analogický; obdobný |
| angle: acute | [æŋgl]: [ə'kju:t] | úhel: ostrý |
| adjacent | [ə'džeisənt] | přilehlý |
| alteranate | [o:l'tə:nət] | střídavý, protilehlý |
| corresponding | [kori'spondiŋ] | shodný, souhlasný |
| complementary | [,kompli'mentəri] | doplňkový |
| exterior | [ek'stiəriə] | vnější |
| fixed (to the ground) | [fikst] | pevný; konstantní |
| interior | [in'tiəriə] | vnitřní |
| obtuse | [əb'tju:s] | tupý (>90°, >180°) |
| opposite | [opəzit] | protilehlý |
| reflex | [rifleks] | tupý (>180°) |
| supplementary | [,sapli'mentəri] | výplňkový |
| angular | [æŋgjulə] | úhlový |
| annulus (pl. annuli) | [ænjuləs/ ænjulai] | mezikruží |
| apex (pl. apices) | [eipeks/ eipisi:z] | vrchol Δ; špička |
| arc | [a:k] | oblouk |
| area | [eəriə] | obsah |
| arithmetic mean | [ə'riθmetic mi:n] | aritmetický průměr |
| arithmetic progression | [ə'riθmetic prəu'grešən] | aritmetická posloupnost |
| assertion | [ə'sə:ršən] | tvrzení |
| assignment | [ə'sainmənt] | převedení; převod; připsání |
| assume | [ə'sju:m] | domnívat se |
| assumption | [ə'sampšən] | domněnka |
| asymptote | [æsimptəut] | asymptota |
| average | [ævəridž] | průměr; průměrný, střední |
| axis (pl. axes) | [æksis/ æksi:s] | osa |

**B**

| | | |
|---|---|---|
| base | [beiz] | základna |
| braces | [breisiz] | závorky |

**C**

| | | |
|---|---|---|
| calculate | [kælkjuleit] | vypočítávat, vykalkulovat |
| calculation | [kælkju'lejšən] | kalkulace; výpočet |
| calculus | [kælkjuləs] | infinitezimální počet (integrální a diferenciální počet) |

| | | |
|---|---|---|
| cell | [sel] | buňka |
| centre of gravity | | těžiště |
| centroid | [sentroid] | těžiště |
| chord | [ko:d] | tětiva |
| circle | [sə:kl] | kružnice, kruh |
| circumference | [sə'kəmfərəns] | obvod kružnice |
| circumscribe | [sə:kəmskraib] | opsat kružnici, křivku |
| coefficient | [kəui'fišənt] | součinitel; koeficient |
| compasses | [kampəsiz] | kružítko |
| conclusion | [kən'klu:žən] | závěr |
| cone | [kəun] | kužel |
| congruence | [koŋgruəns] | shoda |
| congruent | [koŋgruənt] | shodný, souhlasný |
| conic section | [konik sekšən] | kuželosečka |
| conjectural | [kən'džekčərəl] | konjekturální |
| conjecture | [kən'džekčə] | dohad |
| consequence | [konsikwəns] | důsledek |
| constant | [konstənt] | konstanta; konstantní, stálý |
| continuity | [konti'njuəti] | spojitost |
| continuous | [kən'tinjuəs] | spojitý; |
| converge | [kən'və:dž] | sbíhat se, konvergovat |
| convergence | [kən'və:džəns] | konvergence |
| convex | [kon'veks] | konvexní |
| convexity | [kon'veksəti] | konvexita; vypuklina |
| coordinate | [kəu'o:dnət] | souřadnice |
| corollary | [kə'roləri] | důsledek; výsledná věta |
| cosec | [kəusek] | kosekant (zkr.) |
| cosecant | [kəu'si:kənt] | kosekant |
| cosine | [kəusain] | kosinus |
| cot | [kot] | kotangens |
| cotangent | [kəu'tændžənt] | kotangens |
| counterexample | [kauntəig'za:mpl] | protipříklad |
| cube | [kju:b] | krychle |
| curvature | [kə:vəčə] | zakřivení |
| curve | [kə:v] | křivka |
| cylinder | [silində] | válec |
| cylindrical | [si'lidrikəl] | válcový, válcovitý |
| **D** | | |
| decagon | [dekəgən] | desetiúhelník |
| decimal point | [desiml point] | desetinná tečka |
| deductive | [di'daktiv] | deduktivní; co lze odvodit |
| definite | ['definət] | určitý; definitní |
| definition | [defi'nišən] | definice |
| denominator | [di'nomineitə] | jmenovatel |
| – reduce to a common denominator | | – převést na společného jmenovatele |
| derivation | [deri'veišən] | odvození; derivace množiny |

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| | | |
|---|---|---|
| derivative | [di'rivətiv] | derivace (1., 2. … řádu) |
| derive (from) | [di'raiv] | odvodit (z) |
| determine | [di'tə:min] | určit |
| diagonal | [dai'ægənəl] | úhlopříčka |
| diameter | [dai'æmitə] | průměr |
| difference | [difərəns] | rozdíl |
| differential | [difə'renšəl] | diferenciální, diferenciál |
| differentiable: be ~ | [difə'renšiəbl] | mít derivaci |
| differentiate | [difə'renšieit] | derivovat |
| differentiation | [difərenši'eišən] | derivace (opak integrování) |
| dimension | [di'menšən] | rozměr |
| diminish from | [diminiš] | odečíst od |
| diophantine approximation | [daiə'fæntin əproksi'meišən] | diofantická aproximace |
| direction | [di'rekšətn/ dai' rekšətn] | směr |
| directrix | [di'rektris/ dai' rektris] | řídicí přímka |
| discourse | [dis'ko:s/ disko:s] | výklad; přednáška; diskurz |
| distance | [distəns] | vzdálenost |
| distinct | [distinkt] | odlišný |
| dividend | [dividend] | dělenec |
| divisibility | [divizi'biləti] | dělitelnost |
| division | [di'vižən] | dělení |
| divisor | [di'vaizə] | dělitel |
| dodecahedron (pl. dodecahedra) | [dəudikə'hedrən/ dəudikə'hedrə] | dvanáctistěn, dodekaedr |
| domain | [də'mein] | definiční obor |

**E**

| | | |
|---|---|---|
| eccentricity | [eksən'trisəti] | excentricita; výstřednost |
| ellipse | [i'lips] | elipsa (v geometrii) |
| ellipsis (pl. ellipses) | [i'lipsiz/~i:z] | elipsa, výpustka (v jazyce) |
| equation | [i'kweišən/ i'kweižən] | rovnice |
| equidistant (from) | [i:kwi'distənt] | stejně vzdálený (od) |
| equilateral | [i:kwi'lætərəl] | rovnostranný |
| evaluate | [i'væljueit] | vyčíslit |
| evolution | [i:və'lu:šən] | odmocňování |
| example | [ig'za:mpl] | příklad |
| experiment | [ik'sperimənt] | pokus |
| experimentation | [eksperimen'tejšən] | experimentování; zkoušení |
| exponent | [ek'spəunənt] | exponent, mocnitel |
| expression | [ik'sprešən] | výraz; vyjádření |
| extremum (pl. extrema) | [ek'streməm] | extrém |
|         local ~ | [ləukəl ~] |         lokální |
|         ~ problem | [ek'streməm probləm] |         úloha o extrémech |

**F**

| | | |
|---|---|---|
| face | [feis] | stěna, strana (geom.) |
| factor | [fæktə] | činitel (mat.) |
| factorial | [fæk'to:riəl] | faktoriál; faktoriálový |
| factorization | [fæktərai'zeišən] | rozkládání v součin |

| | | |
|---|---|---|
| finite | [fainait] | konečný |
| focus | [fəukəs] | ohnisko |
| force: constant ~ | [fo:s konstənt] | síla: stálá; konstantní |
| horizontal ~ | [hori'zontl] | horizontální |
| vertical ~ | [və:tikl] | vertikální |
| formula (pl. formulae; -as) | [fo:mjulə/ ~li:/ ~ləs] | vzorec |
| fraction: decimal ~ | [frækšən: desiməl] | desetinné číslo |
| fraction: parcial ~ | [frækšən pa:šəl] | zlomek parciální |
| proper ~/ improper ~ | [propə/ im'propə] | pravý / nepravý |
| vulgar ~ | [valgə] | obyčejný |
| friction | [frikšən] | tření |
| function: bounded | [fankšən: baundid] | funkce: omezená |
| convex | [kon'veks] | konvexní, vypuklá |
| rational | [ræšənəl] | racionální |
| continuous | [kən'tinjuəs] | spojitá |
| differentiable | [difə'renšiəbl] | mající derivaci |
| **G** | | |
| geometry | [dži'omitri] | geometrie |
| graph | [græf] | graf; diagram; grafické znázornění |
| gravity | [grævəty] | přitažlivost (zem.); gravitace |
| guesswork | [geswə:k] | hádání (ve snaze uhodnout) |
| **H** | | |
| heptagon | [heptəgən] | sedmiúhelník |
| hexagon | [heksəgən] | šestiúhelník |
| hexahedron (pl. hexahedra) | [heksə'hedrən/~rə] | šestistěn |
| hold (for sth) | [həuld] | platit (pro co) |
| honeycomb | [hanikəum] | plástev medu |
| hypothesis (pl. hypotheses) | [hai'poθisis/~si:z] | hypotéza; předpoklad |
| hypothesize [hai'poθisaiz] | [hai'poθisaiz] | formulovat předpoklad |
| hypothetical | [ˌhaipəu'θetikəl] | hypotetický |
| **I** | | |
| icosahedron (pl. icosahedra) | [aikəsə'herən/~rə] | dvacetistěn, ikosaed |
| incentre | [insentə] | střed kružnice vepsané |
| induction | [in'dakšən] | indukce |
| infinite | ['infinət] | nekonečný |
| infinity | [in'finiti] | nekonečno |
| integer: positive | [inti:džə: pozətiv] | celé číslo: kladné |
| integral | [intigrəl] | integrál |
| intercept | [intəsept] | souřadnice průsečíků grafu funkce s osami soustavy souřadnic |
| intersect | [intə'sekt] | protínat |
| intersection | [intə'sekšən] | průnik; průsečík |
| interval: closed | [intəvəl: kləuzd] | interval uzavřený |
| open | [əupən] | otevřený |
| unit | [ju:nit] | jednotkový |
| involution | [invə'lu:šən] | umocňování |
| isosceles | [ai'sosili:z] | rovnoramenný |

## K
| | | |
|---|---|---|
| kite | [kait] | deltoid |

## L
| | | |
|---|---|---|
| lateral | [lætərəl] | postranní |
| line: horizontal | [lain: hori'zontl] | přímka: vodorovná |
| parallel | [pærəlel] | rovnoběžná, souběžná |
| real | [riəl] | reálná |
| slanting | [sla:ntiŋ] | šikmá |
| straight | [streit] | přímka |
| vertical | [və:tikl] | svislá, vertikální |
| locus | [ləukəs] | geometrické místo |

## M
| | | |
|---|---|---|
| magnitude | [mægnitju:d] | velikost |
| mathematical | [mæθi'mætikəl] | matematický |
| mathematician | [mæθimə'tišən] | matematik |
| mathematics/ maths | [mæθi'mætiks/ mæθs] | matematika |
| mean | [mi:n] | průměr; střední hodnota |
| median | [mi:djən] | těžnice; středový, střední |
| minuend | [minjuənd] | menšenec |
| multiple | [maltipl] | násobek |
| multiply | [maltiplai] | násobit |

## N
| | | |
|---|---|---|
| notion | [nəušən] | pojem |
| nought | [no:t] | nula |
| nucleous (pl. nucleoli) | [nju:klioləs/ nju:kliolai] | jadérko |
| number: complex | [kompleks] | číslo: komplexní |
| composite | [kompəzit] | složené |
| even | [i:vn] | sudé |
| finite | [fainait] | konečné |
| irrational | [i'ræšənəl] | iracionální |
| odd | [od] | liché |
| natural | [næčərəl] | přirozené |
| negative | [negətiv] | záporné |
| positive | [pozətiv] | kladné |
| rational | [ræšənəl] | racionální |
| real | [riəl] | reálné |
| serial | [siəriəl] | řadové |
| numerator | [nju:məreitə] | čitatel |

## O
| | | |
|---|---|---|
| oblique line | [ə'bli:k lain] | křivka |
| obtuse | [əb'tju:s] | tupý |
| octagon | [oktəgən] | osmiúhelník |
| octahedron (pl. octrahedra) | [oktə'hedrən/ oktə'hedrə] | osmistěn |
| one-variable setting | | jedna proměnná |
| opposite | [opəzit] | protilehlý |
| orthogonal | [o:'θogənəl] | kolmý, pravoúhlý |

## P
| | | |
|---|---|---|
| parallelogram [pærə'lelogræm] | | rovnoběžník |
| parenthesis (pl. parantheses)  [pə'renθisis/~si:z] | | kulaté závorky |

| | | |
|---|---|---|
| pentagon | [pentəgən] | pětiúhelník |
| perimeter | [pə'rimi:tə] | obvod, délka obvodu |
| period | [piəriəd] | perioda |
| perpendicular (to) | [pə:pən'dikjulə] | kolmý (k), svislý |
| physicist | [fizisist] | fyzik |
| physics | [fiziks] | fyzika |
| plane (geometry) | [plein] | rovinná, v rovině |
| point | [point | bod; desetinná tečka |
| ~ of origin | [əv oridžin] | střed kružnice |
| ~ of intersection | [əv intəsekšən] | průsečík |
| corresponding ~ | [kori'spondiŋ] | odpovídající |
| critical ~ | [kritikəl] | kritický; nulový |
| polygon | [poligən] | mnohoúhelník, polygon |
| polyhedron (pl. polyhedra) | [poli'hedrən/ ~rə] | mnohostěn |
| polynomial | [poli'nəumiəl] | mnohočlen, polynom |
| positive integer | [pozətiv inti:džə] | přirozené číslo |
| power | [pauə] | mocnina |
| power exponent | [pauə 'eksponent] | mocnítko |
| premise | [premis] | předpoklad; premisa |
| prime | [praim] | prvočíslo |
| principle | [prinsəpl] | zásada; pravidlo; princip |
| prism | [prizm] | hranol, prizma |
| prismatic | [prizmætik] | hranolovitý |
| procedure | [prə'si:džə] | postup; pochod; způsob práce |
| proceed | [prə'si:d] | postupovat (dále) |
| product | [prodəkt] | součin; průnik |
| proof | [pru:f] | důkaz |
| proportional | [prə'po:šənl] | úměrný |
| protractor | [prə'træktə] | úhloměr |
| prove | [pru:v] | dokázat |
| pyramid | [pirəmid] | jehlan |
| **Q** | | |
| quadrilateral | [kwodri'lætərəl] | čtyřúhelník; čtyřstěn |
| quantifier | [kwontifaiə] | kvantifikátor |
| quantify | [kwontifai] | měřit; vyjadřovat kvantitativně |
| quantity | [kwontəti] | množství, veličina |
| quotient | [kwəušənt] | podíl, kvocient |
| **R** | | |
| radical | [rædikəl] | odmocnina |
| radicand | [rædikənd] | základ odmocniny, odmocněnec |
| radius (pl. radii) | [reidjəs/ reidiai] | poloměr |
| rapidity | [rə'pidəti] | rychlost |
| ratio | [reišiəu] | poměr, úměra |
| ray | [rei] | polopřímka; paprsek |
| rectangle | [rek'tæŋgəl] | obdélník, pravoúhlý čtyřúhelník |

| | | |
|---|---|---|
| reflection | [ri'flekšən] | osová souměrnost; obraz, |
| remainder | [ri'meində] | zbytek |
| resistance: air ~ | [ri'zistəns] | odpor vzduchu |
| rhombic | [rombik] | kosočtvercový, kosodélníkový |
| rhomboid | [romboid] | kosočtvercový, kosodélníkový |
| rhomboidal | [rom'boidəl] | kosočtvercový, kosodélníkový |
| rhombus (pl. rhombi) | [rombəs/ rombai] | kosočtverec |
| root | [ru:t] | odmocnina |
| root sign | [ru:t sain] | odmocnítko |
| rotation | [rəu'teišən] | rotace, otáčení |
| rule | [ru:l] | pravidlo; předpis |

**S**

| | | |
|---|---|---|
| scalar | [skeilər] | skalár |
| secant | [si:kənt] | sečna; sekans |
| sector | [sektə] | výseč |
| segment | [segmənt] | úsečka; kruhová úseč; část |
| semi-circle | [semi'sə:kl] | půlkruh |
| sequence | [si:kwens] | posloupnost |
| series (sg. and pl.) | [si: əri:z] | řada |
| set | [set] | množina |
| sine | [sain] | sinus |
| sphere | [sfiə] | koule |
| spheric harmonics | [sferik ha:'moniks] | sférické harmoniky / sférické harmonické funkce |
| spherical | [sferikəl] | kulatý, kulovitý, sférický |
| square | [skweə] | čtverec, druhá mocnina |
| subscript | [səb'skript] | dolní index |
| subsequence | [sabsikwəns] | podposloupnost |
| subset | [səbset] | podmnožina |
| substitute | [sabstitju:t] | nahradit |
| subtract from | [səb'trækt] | odečíst od |
| subtraction | [səb'trækšən] | odčítání |
| subtrahend | [sabtrəhend] | menšitel |
| sum | [sam] | součet, suma |
| summand | [səma:nd] | sčítanec |
| superscript | [sju:pəskript] | horní index |

**T**

| | | |
|---|---|---|
| tangent | [tændžənt] | tečna; tangens |
| technique | [tek'ni:k] | postup |
| tetrahedron (pl. tetrahedra) | [tetrə'hedrən/ tetrə'hedrə] | čtyřstěn, traedr |
| theorem | [θiərəm] | věta; teorém; rovnice; vzorec |
| transform | [træns'fo:m] | transformovat, zobrazit |
| translation | [træns'leišən] | translace, posunutí |
| transversal | [trænz'və:səl] | příčka, transversála |
| trapezium | [trə'pi:zjəm] | různoběžník |
| trial | [traiəl] | zkouška; pokus |

| | | |
|---|---|---|
| trial-and-error method | ['trailənd'erə'meθəd] | metoda pokusů a chyb |
| trigonomeric | [traigənə'metrik] | trigonometrický |
| truncated | [traŋ'keitəd] | komolý, seříznutý |

**U**

| | | |
|---|---|---|
| union (of sets) | [juniən] | sjednocení (množin) |
| uniqueness | [ju:'ni:knis] | jedinečnost |
| unit interval | [ju:nit intəvəl] | jednotkový interval |
| unknown | [an'noun] | neznámá |

**V**

| | | |
|---|---|---|
| variable | [veəriəbl] | proměnná |
| vector | [vektə] | vektor |
| verify | [verifai] | ověřit; verifikovat |
| vertex (pl. vertices) | [və:teks/ və:tisi:z] | vrchol |
| volume | [voljum] | objem |
| vortex (pl. vortices) | [vo:teks/ vo:tisi:z] | vír, víření |

**Z**

| | | |
|---|---|---|
| zero | [ziərə] | nula |