EXERCISES

I. Read the following expressions – pay attention to pronunciation.

a) 2 – 12 - 20 – 200 – 2,000; 3 – 13 – 30 – 300 – 3,000; 4 – 14 – 40 – 400 – 4,000;

5 – 15 – 50 – 500 – 5,000; 6 - 16 – 60 – 600 – 6, 000; 7 – 17 – 70 – 700 – 7,000;

8 – 18 -80 – 800 – 8,000; 9 – 19 – 90 – 900 – 9,000;

100 - 1,000 – 10,000 – 100,000 – 1,000,000; 5,000,000; 4.5 billion;

b) 99 + 1 = ... 129 + 15 = ... 337 + 582 = ... $a + b = x$

$a + b =$ x $x + 1 = z$ $x + y$ $y + 1$

c) 2,030 – 1,006 $a – x$ $x – 1$ $a – b$

d) 5 x 5 3 x 8 $a . b = 0$ xy

e) 9 : 3 18 : 2 35 : 7 a : b = z

f) 2/3 4/5 1/2 3/4 1/10 5/100 3/1000 a/b b^2/c $\alpha/2$

$\pi/2;$ $1/x;$ $x/2;$ $a+b/x-y$

g) 0.1; 0.003; 0.528; 10.5; 3,891.25; 3.1429; 273.15;

h) 2^2; 2^3; a^2; a^{-2}; a^{-3}; a^x; $(x^2 + y^2) = z$; $a^2 + b^2$; $(a + b)^3$; $(a + b)^m$;

$a^n a^m$; $a^m * a^n = a^{m+n}$; $(a + b)^{-1}$; x^{-1}; $a^{1/3}$; $a^{-1/3}$; a^x; $a^{-1/x}$; $(a^{2/3})^x$;

i) $\sqrt[3]{x}$; $\sqrt[3]{a}$; $\sqrt[4]{x+1}$; $\sqrt[n]{y}$; $-\sqrt[3]{a}$; $-\sqrt[3]{x}$; $\sqrt[n]{a^n} = a$; $\sqrt[n]{a} = a^{1/n}$;

$\sqrt[n]{1/a}$; $a\sqrt[n]{b} = \sqrt[n]{a^n b}$;

II. Read the following symbols.

0 + - $\pm$ $a*b$ $x:y = a:b$ = $\equiv$ $\neq$ $\approx$ $\doteq$

$a > b$ $b < a$ $a \not> b$ $y \not< z$ (...) [...] $\tilde{a}$ a^* $\bar{a}$ a'

a'' a_n x_1 y_2 $|a|$ $\rightarrow$ X a $\int$ $\iint$ ∞

III. Read the letters of the Greek alphabet and give their equivalents in Czech.

$\alpha,\ \beta,\ \gamma,\ \delta,\ \omega,\ \Delta,\ \vartheta,\ \lambda,\ \varphi,\ \mu,\ \nu,\ \rho,\ \eta,\ \varepsilon,\ \tau,\ \chi,\ \psi,\ \kappa,\ \zeta,\ \xi,\ \upsilon,\ o,\ \upsilon,\ \Sigma,\ \pi,\ \Pi,\ \Omega$

IV. Read the words and pay attention to their stress - if necessary, use a dictionary.

different, difference, differentiate, differential, differentiation

add, addition additional, additionally

subtract, subtraction

multiply, multiplication, multiple

divide, division, divisible, divisor

integrate, integration, integral, integer, integrated, integrity

derive, derivation, derivative

V. Say in Czech.

equation expression formula theorem lemma proof theory

quantity quality constant variable value property relation

definition result corollary statement

VI. Say in English.

druhá mocnina	třetí mocnina	kořen	desetinné číslo
zlomek	v čitateli	ve jmenovateli	desetinná tečka
matematická analýza	součet	součin	n-tá odmocnina z …..
zlomková čára	rozlišit	derivovat	odvodit
krátit zlomek	tudíž	rovnice platí	předpokládejme, že
nechť $a = 1$	konečné číslo	celé číslo	nekonečno

50 %	řadová číslovka	0^0 C	na obr.3
zaokrouhlit	*x* je rovno ……	*a* se blíží 0	neurčité číslo
rozdíl	sudý	lichý	v rovnici 2
druhá derivace	označme	důkaz	v tabulce 4

VII. Fill in the missing words – each word can be used only once.

sum	**number**	**calculus**	**infinite**	**technique,**
branch	**theorems**	**differential**	**limit**	**concept,**
applying	**subdivision**	**variable**	**zero**	**operations**
differentiation				

The branch of mathematics referred to as calculus (or the …….) is customarily divided into two main parts, i.e. ……. and integral calculus, although the techniques of calculus also involve work with ……. sequences and series. In fact, calculus is merely a part of a larger ……. of mathematics that uses the same ……. . This ……. of mathematics is usually called analysis. The major ……. of calculus and the techniques for ……. its operations to problem solving are based on the concept of ……. . The limit ……. is basic to the development of the two main ……. of the calculus that are not found in more elementary mathematics, namely differentiation and ……. . In general, ……. is used to determine the instantaneous rate of change in one ……. with respect to another; that is, the limit of the rate of change as the time of the change approaches ……. . Similarly, integration is used to obtain an exact sum of an infinite ……. of parts; that is, the limit of the ……. as the number of parts increases without bound.

VIII. Translate into Czech.

……. where ……. stands for ……. ……
the ……. is proved in /can be proved in ……. ……..
when solved (= equation) by means of ……. ……
where ……. represents ……. ……..
function ……. is of the form ……. ……
the formula represents ……. ……
……. can be written in the following form ……. ……
in the case of ……. ……
there is a function ……. such that ……. ……..
the model under consideration ……..
let us denote ……. ……..

the boundary conditions are approximated by ……. ……..
……
the system is supplemented with the initial conditions ……
……
……. takes the value 1 ……
in the first case, ……. is used ……..
the simplified method is then employed for ……. ……
the derived systems were solved by means of ……. ……
only the error of the functions ……. and ……. was considered
……
the model studied does not possess an analytical solution ……
……
equations (1)and (2) were transformed in the form ……
……
the three cases depicted in Fig.2 will be denoted A, B, and C respectively ……
……
let us note that, in general, it cannot be stated that ……. ……
……
in the author´s opinion, the most significant difference between ……. consists in ……
……
it follows from the numerical results that ……. ……