

PŘÍKLAD.

$$\sqrt[2]{x^3} \cdot \sqrt[4]{x^3} \cdot \sqrt[8]{x^3} \cdot \sqrt[16]{x^3} \dots$$

$$x^{\frac{6}{2}} = x^3$$

$$\frac{3}{2} + \frac{3}{4} + \frac{3}{8} + \frac{3}{16} + \dots$$

$$= x^3$$

$$\frac{3}{2} + \frac{3}{4} + \frac{3}{8} + \frac{3}{16} + \dots$$

$$q = \frac{\frac{3}{8}}{\frac{3}{4}} = \frac{1}{2}$$

je geom. postupnosť

geom. rad

$$q = \frac{\frac{3}{8}}{\frac{3}{4}} = \frac{3 \cdot 2}{3 \cdot 4} = \frac{1}{2}$$

$$2|q| < 1$$

$$s = \frac{a_1}{1-q} = a_1 \cdot \frac{1}{1-q}$$

$$= \frac{\frac{3}{2} \cdot 1}{1 - \frac{1}{2}} = \frac{\frac{3}{2}}{\frac{1}{2}} = 3$$

$$3 \cdot 3^k = 3^{k+1}$$

$$\cancel{3 \cdot 3^k} = 3^k$$

1

Partial AD.

$$\frac{8}{x+10} = 1 - \frac{3}{x} + \frac{9}{x^2} - \frac{27}{x^3} + \dots$$

$$r = \frac{-\frac{3}{x}}{1} = \frac{a_2}{a_1} = -\frac{3}{x}$$

$$\left| -\frac{3}{x} \right| < 1$$

$$\left| \frac{3}{x} \right| < 1 \quad \underline{\underline{|x| > 3}}$$

$$s = \frac{1}{1 - \left(-\frac{3}{x}\right)} = \frac{1}{1 + \frac{3}{x}} = \frac{1}{\frac{x+3}{x}} = \frac{x}{x+3}$$

$$\frac{8}{x+10} = \frac{x}{x+3} \quad | \cdot (x+10)(x+3)$$

$$8x+24 = x^2+10x$$

$$x^2+2x-24=0$$

$$x_{1/2} = \frac{-2 \pm \sqrt{4+96}}{2} = \frac{-2 \pm 10}{2} = \begin{matrix} -6 \\ 4 \end{matrix}$$

$$|-6| = 6 > 3 \quad \checkmark$$

$$|4| = 4 > 3 \quad \checkmark$$

2

$$|a| = |-a|$$

$$\left| -\frac{3}{x} \right| = \left| \frac{3}{x} \right|$$

VYJADRĚT V TĚCHTO ZNAČKÁCH.

$$2, \overline{25}$$

$$x = 2, \overline{25} \quad | \cdot 100$$

$$100x = 225, \overline{25}$$

$$99x = 223$$

$$x = \frac{223}{99}$$

$$x = 3,4\overline{65}$$

$$10x = 34, \overline{65}$$

$$1000x = 3465, \overline{65}$$

$$990x = 3431$$

$$x = \frac{3431}{990}$$

$$2, \overline{25} = 2 + \frac{25}{100} + \frac{25}{1000} + \frac{25}{100000} + \dots$$

$$q = \frac{1}{100} = \frac{1}{10^2} \quad \Delta$$

$$\Delta = \frac{25}{100} + \frac{25}{10^4} + \frac{25}{10^6} + \dots$$

$$\Delta = \frac{\frac{25}{100}}{1 - \frac{1}{10^2}} = \frac{\frac{25}{100}}{\frac{99}{100}} = \frac{25}{99}$$

$$2, \overline{25} = 2 + \frac{25}{99} = \frac{99 \cdot 2 + 25}{99} = \frac{223}{99}$$

$$x = 3 + \frac{4}{10} + \frac{65}{1000} + \frac{65}{10^5} + \dots$$

$$\frac{34}{10} + \frac{\frac{65}{1000}}{1 - \frac{1}{100}} = \frac{34}{10} + \frac{\frac{65}{1000}}{\frac{99}{100}} = \frac{34}{10} + \frac{65}{990}$$

$$\frac{3431}{990}$$

(3)

SUČETNÝ LÚČ STRÁKA PRI PRECHODE SKLENOU POSKOV 1/15 SUČEJ JASNOSTI.
 AK JE JASNOŠŤ LÚČA PO PRECHODE PIATIMI ROVNAKÝMI DOSKAMI: ④

a - po kvádru

$$\frac{3}{5} \cdot 10 = \frac{1}{5} \cdot 10 = 6$$

po 1. doske $a - \frac{1}{15}a = a_1 = \left(1 - \frac{1}{15}\right)a$

po 2. doske $a_1 - \frac{1}{15}a_1 = \left(1 - \frac{1}{15}\right)a_1 = \left(1 - \frac{1}{15}\right)^2 a$

⋮

po 5. doske $a_4 - \frac{1}{15}a_4 = \left(1 - \frac{1}{15}\right)a_4 = \left(1 - \frac{1}{15}\right)^5 a$

$$= \frac{14^5}{15^5} a = \frac{537824}{459375} a \doteq 0,708a$$

5

CENA NADOBRUDUTIA VÝROBKU ZOČA 2800€.
AKO CENU BUDE MAŤ ZARIADENIE PO 5 ROKOCH, AK

a) AK SA KAŽDÝ ROK OPŤIŠE O NADOB. CENU 15%

b) O AKTUÁLNEJ CENY ZARIAD. SA OPŤIŠE 15%

a) $a = 2800 \text{ €}$

$$a_1 = a - \frac{15}{100} \cdot a$$

$$a_2 = a - \frac{15}{100} a - \frac{15}{100} a = a - 2 \cdot \frac{15}{100} a$$

⋮

$$a_5 = a - 5 \cdot \frac{15}{100} a = \left(1 - \frac{45}{100}\right) a = \frac{25}{100} a = \frac{1}{4} a$$

$$a = 2800$$

$$a_5 = 700 \text{ €}$$

b) $a_1 = \left(1 - \frac{15}{100}\right) a$ $a_5 = \left(1 - \frac{15}{100}\right)^5 a =$

$$a_2 = \left(1 - \frac{15}{100}\right) a_1 = \left(1 - \frac{15}{100}\right)^2 a$$

$$= \left(\frac{85}{100}\right)^5 \cdot 2800 \doteq 1242,374 \dots$$

ČÍSLE SÚSTAV

POVIČNÉ ČÍSLE SÚSTAV

234

432

$$x = 234$$

$$x = 4 \cdot 10^0 + 3 \cdot 10^1 + 2 \cdot 10^2$$

$$234_{10} = 4 \cdot 10^0 + 3 \cdot 10^1 + 2 \cdot 10^2 + 8 \cdot 10^{-1} + 1 \cdot 10^{-2}$$

$$x = a_0 \cdot 10^0 + a_1 \cdot 10^1 + a_2 \cdot 10^2 + \dots + a_k \cdot 10^k + a_{-1} \cdot 10^{-1} + a_{-2} \cdot 10^{-2} + a_{-3} \cdot 10^{-3} + \dots$$

$$x = 10 \quad a_i \in \{0, 1, 2, \dots, 9\}$$

$$x \quad a_i \in \{0, 1, \dots, x-1\}$$

INDUČIA

1-9, 0

ČÍSLE

ARAB/

4. stávie, Roz. systém
desiatich čísel

ARMSKÉ ČÍSLE

Číslo	Symbol	Value
I	I	1
V	V	5
X	X	10
L	L	50
C	C	100
D	D	500
M	M	1000

Číslo

IV 4

IX 9

XL 40

XC 90

CD 400

CM 900

TRICK AD.

$$(235, 81)_{10} \rightarrow ($$

$$(235)_{10} \rightarrow$$

$$(0, 81)_{10} \rightarrow$$

235 :: 2	
114	1
58	1
29	0
14	1
7	0
3	1
1	1
0	1



)₂

$$(11101011, 11001111)_2 \text{ VPS EPOK}$$

$$235 = 128 + 107 = 128 + 64 + 32 + 8 + 2 + 1$$

$$= 1 \cdot 2^0 + 1 \cdot 2^1 + 0 \cdot 2^2 + 1 \cdot 2^3 + 0 \cdot 2^4 + 1 \cdot 2^5 + 1 \cdot 2^6 + 1 \cdot 2^7$$

$$(11101011)_2 = 235$$

$$3 \cdot 4^0 + 2 \cdot 4^1 + 2 \cdot 4^2 + 3 \cdot 4^3 = 11 + 32 + 192 = 235$$

$$(11101011)_2 = (3223)_4$$

$$\{011243\}$$

$$(11101011)_2 = (353)_8$$

$$3 \cdot 8^0 + 5 \cdot 8^1 + 3 \cdot 8^2 = 235$$

$$(11101011)_2 = (E B)_{16}$$

$$14 \cdot 16^1 + 11 \cdot 16^0 = 235$$

$$0, 1, \dots, 9, A, B, C, D, E, F, 10, 11, 12, 13, 14, 15$$

$(0.81)_2 < 1$
 0.81_2
 $1.62 > 1$
 0.62_2
 $1.24 > 1$
 0.24_2
 $0.48 < 1$
 $0.96 < 1$
 $1.92 > 1$
 0.92_2
 $1.84 > 1$
 0.84_2
 $1.68 > 1$
 0.68_2
 $1.36 > 1$
 \vdots

⑧

$$\begin{aligned}
 & 2^1 2^2 \\
 & 0.11001111 \dots \\
 & \left[1 \cdot 2^{-1} + 1 \cdot 2^{-2} + 1 \cdot 2^{-5} + 1 \cdot 2^{-6} + 1 \cdot 2^{-7} + 1 \cdot 2^{-8} + \dots \right] \\
 & \dots = 0.81
 \end{aligned}$$

$$\begin{aligned}
 & 0.11001111 \\
 & (0.3033)_4 \\
 & 0.110011110 \\
 & (0.36)_8 \\
 & 0.11001111 \\
 & (0.1CF)_{16}
 \end{aligned}$$

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$$(11101011)_2 \xrightarrow{2} ()_{10}$$

HORNEROVA SCHEMA

1	1	1	0	1	0	1	1
2	2	6	14	28	58	116	134
1	3	7	14	29	58	117	135

(135)₁₀

PREVOD DES. ČÍSEL Z JEDNEJ SÚSTAVY DO DRUHÉJ (10)

$$x = a_1 x^{-1} + a_2 x^{-2} + \dots + a_k x^{-k} + \dots$$

$$\underline{x} = b_1 y^{-1} + b_2 y^{-2} + \dots + b_s y^{-s} \quad | \cdot y$$

$$x \cdot y = (b_{-1}) + b_{-2} y^{-1} + \dots + b_{-s} y^{-s+1} \quad | \cdot y$$

PRÍKLAD

$(0,345)_{10}$ vyjadriť v osemčíslovej sústave

$$x = (0,345)_{10}$$

$$x = 10$$

$$y = 8 \quad x = b_{-1} \cdot 8^{-1} + b_{-2} \cdot 8^{-2} + \dots$$

$$0,345 \cdot 8$$

$$\underline{\underline{3000}}$$

$$x = (0,3)_{8} \quad x = 3 \cdot 8^{-1} = \frac{3}{8}$$

$$3:8 = 0,375$$

$$b_{-1}$$

(11)

$$\left(\frac{14}{6}\right)_{10} \div \left(\cdot\right)_8 \quad (2,65\overline{2})_8$$

$$2\frac{5}{6}$$

$$\frac{5}{6} = b_{-1}8^1 + b_{-2}8^2 + \dots \quad | \cdot 8$$

$$\boxed{6}\frac{2}{3} = \frac{40}{6} = (b_{-1}) + b_{-2}8^1 + b_{-3}8^2 + \dots$$

$$\frac{2}{3} = b_{-2}8^1 + b_{-3}8^2 + b_{-4}8^3 + \dots \quad | \cdot 8$$

$$5\frac{1}{3} = \frac{16}{3} = (b_{-2}) + b_{-3}8^1 + b_{-4}8^2 + \dots$$

$$\frac{1}{3} = b_{-3}8^1 + b_{-4}8^2 + \dots \quad | \cdot 8$$

$$2\frac{5}{3} = \frac{8}{3} = (b_{-3}) + b_{-4}8^1 + \dots$$

$$\frac{2}{3} = b_{-4}8^1 + b_{-5}8^2 + \dots$$