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「電卓を使った対数の表作り」の続きを書きました。P. 28の表の使い方を、 $\log_{10} 13$ の場合を示しました。

山崎川の桜の花が咲き始めました。今年も見ることができたことをうれしく思っています。

$\log_{10} 7$

$$431 \div 510 = 0.845098039215$$

$$\text{[2.3補正]} + 0.000000000799$$

$$\hline 0.845098040014$$

 $\log_{10} 2$

$$21306 \div 70777 = 0.301029995620$$

$$\text{[2.3補正]} + 0.000000000044$$

$$\hline 0.301029995664$$

 $\log_{10} 3$

(P. 13)

$$0.477121254719$$

 $\log_{10} 5$

$$1 - \log_{10} 2$$

$$0.698970004336$$

$\log_{10} 1.1$

$$1.1^{18} = 5.55991731346 - (A)$$

$$A \div 5 \times 9 = 10.0078511642$$

$$= 1.00078511642 \times 10^1$$

$$\log_{10} 1.1 \doteq (1 + \log_{10} 5 - 2 \log_{10} 3) \div 18$$

$$\doteq 0.04137374971$$

$$[2.3 \text{補正}] + 0.00001896416$$

$$0.04139271387$$

$$0 + (24, 6, 3, 2, 1, 1 \dots)$$

$$\frac{0}{1} \quad \frac{1}{24} \quad \frac{6}{145} \quad \frac{19}{459} \quad \frac{44}{1063} \quad \frac{63}{1522} \quad \frac{107}{2585}$$

$$1.1^{1063} = 1.00097751744 \times 10^{44}$$

$$44 \div 1063 = 0.04139228598$$

$$[2.3 \text{補正}] + 0.0000039981$$

$$0.04139268579$$

$$0 + (24, 6, 3, 2, 1, 1, 3, 1, 1, 2 \dots)$$

$$1.1^{2585} = 1.00020986495 \times 10^{107}$$

$$107 \div 2585 = 0.04139264990$$

$$[2.3 \text{ 補正}] + 0.00000003529$$

$$\hline 0.04139268519$$

$$0 + (24.6.3.2.1.1.\underline{3.1.1.1.7} \dots)$$

$$3 \quad 1 \quad 1$$

$$\begin{array}{r} 384 \\ \hline 9277 \end{array} \quad \begin{array}{r} 491 \\ \hline 11862 \end{array} \quad \begin{array}{r} 875 \\ \hline 21139 \end{array}$$

$$1.1^{21139} = 0.999934511581 \times 10^{875}$$

$$875 \div 21139 = 0.04139268650362$$

$$[2.3 \text{ 補正}] - 0.0000000134704$$

$$\hline 0.04139268515658$$

$$\log_{10} 1.01$$

$$1.01^{10} = 1.10462212539 \quad \text{---(A)}$$

$$A \div 1.1 = 1.00420193217$$

$$\log_{10} 1.01 \doteq \log_{10} 1.1 \div 10$$

$$\doteq 0.004139268515658$$

$$[2.3 \text{補正}] \quad \begin{array}{r} + 0.000182692703043 \\ \hline \end{array}$$

$$0.004321961218701$$

$$0 + (231, 2, 1, 1, 1, 10, 4, \dots)$$

$$231 \quad 2 \quad 1 \quad 1 \quad 1$$

$$\begin{array}{r} 0 \\ 1 \end{array} \quad \begin{array}{r} 1 \\ 231 \end{array} \quad \begin{array}{r} 2 \\ 463 \end{array} \quad \begin{array}{r} 3 \\ 694 \end{array} \quad \begin{array}{r} 5 \\ 1157 \end{array} \quad \begin{array}{r} 8 \\ 1851 \end{array}$$

$$1.01^{1851} = 0.997385088405 \times 10^8$$

$$8 \div 1851 = 0.00432198811$$

$$[2.3 \text{補正}] \quad \begin{array}{r} - 0.00000061582 \\ \hline \end{array}$$

$$0.00432137229$$

$$0 + (231, 2, 2, 4, 1, 1, 1, 1, 1, \dots)$$

$$\begin{array}{r}
 231 \quad 2 \quad 2 \quad 4 \quad 1 \\
 \frac{0}{1} \quad \frac{1}{231} \quad \frac{2}{463} \quad \frac{5}{1157} \quad \frac{22}{5091} \quad \frac{27}{6248} \\
 1.01^{6248} = 0.999869662247 \times 10^{27}
 \end{array}$$

$$27 \div 6248 = 0.00432138284$$

$$\begin{array}{r}
 [2.3 \text{補正}] \quad -0.00000000906 \\
 \hline
 0.00432137378
 \end{array}$$

$$0 + (231, 2, 2, 4, 1, 2, 84 \dots)$$

$$\begin{array}{r}
 2 \quad 2 \quad 4 \quad 1 \quad 2 \\
 \frac{0}{1} \quad \frac{1}{231} \quad \frac{2}{463} \quad \frac{5}{1157} \quad \frac{22}{5091} \quad \frac{27}{6248} \quad \frac{76}{17587} \\
 1.01^{17587} = 1.00000162436 \times 10^{76}
 \end{array}$$

$$76 \div 17587 = 0.00432137374196$$

$$\begin{array}{r}
 [2.3 \text{補正}] \quad +0.0000000004016 \\
 \hline
 0.00432137378212
 \end{array}$$

$$\log_{10} 1.001$$

$$1.001^{10} = 1.01004512019 \quad - (A)$$

$$A \div 1.01 = 1.00004467345$$

$$\log_{10} 1.001 \doteq \log_{10} 1.01 \div 10$$

$$\doteq 0.00043213737$$

$$[2.3 \text{補正}] + \frac{0.00000194232}{}$$

$$0.00043407969$$

$$0 + (2303, 1, 2, 1, 1, 2, 3, 3 \dots)$$

$$1 \quad 2 \quad 1$$

$$\frac{0}{1} \quad \frac{1}{2303} \quad \frac{1}{2304} \quad \frac{3}{6911} \quad \frac{4}{9215}$$

$$1.001^{9215} = 1.00005516641 \times 10^4$$

$$4 \div 9215 = 0.000434074877916$$

$$[2.3 \text{補正}] + \frac{0.000000002602864}{}$$

$$0.000434077480780$$

$$0 + (2303, 1, 2, 1, 3, 1, 3, 2, 5 \dots)$$

$$\begin{array}{r} 2303 \quad 1 \quad 2 \quad 1 \quad 3 \\ \hline 0 \quad 1 \quad 1 \quad 3 \quad 4 \quad 15 \\ 1 \quad 2303 \quad 2304 \quad 6911 \quad 9215 \quad 34556 \end{array}$$

$$1.001^{34556} = 0.999957069866 \times 10^{15}$$

$$15 \div 34556 = 0.00043407801828$$

$$[2.3 \text{補正}] - 0.00000000054017$$

$$\hline 0.00043407747811$$

$$0 + (2303, 1, 2, \underline{1, 3, 1, 3}, 1, 5 \dots)$$

$$\begin{array}{r} 1 \quad 3 \quad 1 \quad 3 \\ \hline 4 \quad 15 \quad 19 \quad 72 \\ 9215 \quad 34556 \quad 43771 \quad 165869 \end{array}$$

$$\log_{10} 1.0001$$

$$1.0001^{10} = 1.00100045005 \quad - (A)$$

$$A \div 1.001 = 1.00000044964$$

$$\log_{10} 1.0001 \doteq \log_{10} 1.001 \div 10$$

$$\doteq 0.0000434077478$$

$$\{2.3 \text{ 補正} \} + \frac{0.0000000195495}{0.0000434272973}$$

$$0.0000434272973$$

$$0 + (23026, 1, 208, 1 \dots)$$

$$1 \quad 208$$

$$\frac{0}{1} \quad \frac{1}{23026} \quad \frac{1}{23027} \quad \frac{209}{4812642}$$

$$1.0001^{4812642} = 0.999841087853 \times 10^{209}$$

$$209 \div 4812642 = 0.000043427290041$$

$$\{2.3 \text{ 補正} \} - \frac{0.0000000000014358}{0.000043427275683}$$

$$0.000043427275683$$

$$\log_{10} 1.00001$$

$$1.00001^{10} = 1.0001000045 \quad - (A)$$

$$A \div 1.0001 = 1.00000000449$$

$$\log_{10} 1.00001 \doteq \log_{10} 1.0001 \div 10$$

$$\doteq 0.000004342727$$

$$[2.3 \text{ 補正}] \quad + \quad \frac{0.000000000195}{}$$

$$0.000004342922$$

$$0 + (230259, 1, 4, 1 \dots)$$

$$\frac{0}{1} \quad \frac{1}{230259} \quad \frac{1}{230260} \quad \frac{5}{1151299}$$

$$1.00001^{1151299} = 1.00000661883 \times 10^5$$

$$5 \div 1151299 = 0.000004342920475$$

$$[2.3 \text{ 補正}] \quad + \quad \frac{0.000000000002499}{}$$

$$0.000004342922974$$

$\log_{10} N$ の表 (1)

N	
2	0.301029995664
3	0.477121254719
4	0.60205999132
5	0.698970004336
6	0.77815125038
7	0.845098040014
8	0.90308998699
9	0.95424250944
1.1	0.041392685156
1.01	0.00432137378
1.001	0.000434077478
1.0001	0.000043427275
1.00001	0.00000434292

$\log_{10} N$ の表 (2)

N

10		1
11		1.041392685156
12	$2 \times 2 \times 3$	1.07918124605
13	$13 \div 12 = 1.08\dot{3}$	
14	2×7	1.14612803568
15	3×5	1.176091259055
16	$2 \times 2 \times 2 \times 2$	1.204119982656
17		
18	$2 \times 3 \times 3$	1.25527250510
19		
20		1.301029995664

$\log_{10} 13$

$$13 \div 12 = 1.083333333333$$

$$\div 1.01^8 = 1.00044015766$$

$$\div 1.0001^4 = 1.00004008161$$

$$\div 1.00001^4 = 1.00000008097$$

$$\log_{10} 12 + 8 \cdot \log_{10} 1.01 + 4 \cdot \log_{10} 1.0001 + 4 \cdot \log_{10} 1.00001$$

$$1.07918124605$$

$$0.03457099024$$

$$0.00017370908$$

$$+ 0.00001737168$$

$$1.11394331705$$

$(1.000000008097 - 1) \div 2.3$ で補正

$$+ 0.00000003520$$

$$1.11394335225$$

この計算結果を $\log_{10} 1.3$ で確かめます。

$\log_{10} 1.3$

0.11394331705

0+(8.1.3.2.7.1.6.1.9...)

$$\begin{array}{cccccccc} & & & 1 & 3 & 2 & 7 & 1 & 6 \\ \frac{0}{1} & \frac{1}{8} & \frac{1}{9} & \frac{4}{35} & \frac{9}{79} & \frac{67}{588} & \frac{76}{667} & \frac{523}{4590} \end{array}$$

$$\begin{array}{r} 1 \\ \hline 599 \\ 5257 \end{array} \qquad \begin{array}{r} 9 \\ \hline 5914 \\ 51903 \end{array}$$

0.11394335225

0+(8.1.3.2.7.1.6.16...)

$$\begin{array}{ccc} & 1 & 6 & 16 \\ \frac{76}{667} & \frac{523}{4590} & \frac{8444}{74107} \end{array}$$

$$1.3^{51903} = 1.00418738493 \times 10^{5914}$$

$$5914 \div 51903 = 0.11394331734$$

$$[2.3 \text{ 補正}] + 0.00000003507$$

$$0.11394335241$$

$$1.3^{74107} = 1.00002162444 \times 10^{8444}$$

$$8444 \div 74107 = 0.113943352179$$

$$[2.3 \text{ 補正}] + 0.00000000126$$

$$0.113943352305$$