

LE ESPRESSIONI CON I NUMERI NATURALI (\mathbb{N})

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Autore: E. M. Latorre — E-mail: elatorre@divulgazionelibera.it

Sommario *Il presente documento contiene un certo numero di esercizi svolti a supporto del lettore. Risolverli, costituisce un metodo efficace per imparare ed acquisire le tecniche matematiche necessarie per affrontare lo studio di argomenti successivi.*

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INTRODUZIONE

Gli esercizi proposti nel codesto documento riguardano il seguente argomento:

- *le espressioni con i numeri naturali (\mathbb{N}).*

Le tracce di alcuni esercizi trovano ispirazione dai seguenti libri:

- *Matematica.verde 1, Bergamini, Trifone, Barozzi - Zanichelli Editore;*
- *Corso di algebra 1, Dodero, Toscani - Ghisetti e Corvi Editori.*

LE ESPRESSIONI CON I NUMERI NATURALI (\mathbb{N})

$$\begin{aligned}(3+2-5)+5+4\cdot 6-18:3+1 &= \\ &= 0+5+24-6+1 = \\ &= 29-6+1 = \\ &= 23+1 = 24.\end{aligned}\tag{1}$$

$$\begin{aligned}15-[17-(15+1):8]+(3\cdot 1)-3 &= \\ &= 15-[17-16:8]+3-3 = \\ &= 15-[17-2]+0 = \\ &= 15-15 = 0.\end{aligned}\tag{2}$$

$$\begin{aligned}[(27+2)-4:(6+3+1-6)]-20 &= \\ &= [29-4:4]-20 = \\ &= [29-1]-20 = \\ &= 28-20 = 8.\end{aligned}\tag{3}$$

$$\begin{aligned}[17-(15-3):4]\cdot(1+1)-[(2+3+4-2)\cdot 4] &= \\ &= [17-12:4]\cdot 2-[7\cdot 4] = \\ &= [17-3]\cdot 2-28 = \\ &= 14\cdot 2-28 = \\ &= 28-28 = 0.\end{aligned}\tag{4}$$

$$\begin{aligned}2+2+3\cdot[15:(3+(1\cdot 2+7-7))-1] &= \\ &= 4+3\cdot[15:(3+2)-1] = \\ &= 4+3\cdot[15:5-1] = \\ &= 4+3\cdot[3-1] = \\ &= 4+3\cdot 2 = \\ &= 4+6 = 10.\end{aligned}\tag{5}$$

$$\begin{aligned}[4\cdot(5+2-3)+5\cdot(6-2+4-4)]-(3\cdot 10) &= \\ &= [4\cdot 4+5\cdot 4]-30 = \\ &= [16+20]-30 = \\ &= 36-30 = 6.\end{aligned}\tag{6}$$

$$\begin{aligned}(2+12+8-2-5):5-(6+3+4-9-3+1) &= \\ &= 15:5-2 = \\ &= 3-2 = 1.\end{aligned}\tag{7}$$

$$\begin{aligned}[(2\cdot 4+7)+(6\cdot 1-6)+(2+8:2)\cdot 5]-(6+2)\cdot 5 &= \\ &= [8+7+0+6\cdot 5]-8\cdot 5 = \\ &= [15+30]-40 = \\ &= 45-40 = 5.\end{aligned}\tag{8}$$

$$\begin{aligned}
& \{[20 : (2 + 2 - 1 - 3 + 4)] \cdot [(2 + 8 - 3 - 2) \cdot 2]\} : [(5 + 5) + (3 \cdot 5)] = \\
& = \{[20 : 4] \cdot [5 \cdot 2]\} : [10 + 15] = \\
& = \{5 \cdot 10\} : 25 = \\
& = 50 : 25 = 2.
\end{aligned} \tag{9}$$

$$\begin{aligned}
& \{[(1 + 3 - 2) \cdot (4 + 8)] : [(8 + 6 + 2) - (4 \cdot 2)]\} + 3 \cdot (5 - 2) = \\
& = \{[2 \cdot 12] : [16 - 8]\} + 3 \cdot 3 = \\
& = \{24 : 8\} + 9 = \\
& = 3 + 9 = 12.
\end{aligned} \tag{10}$$

$$\begin{aligned}
& [12 - (3 + 2)] \cdot 2 - [(2 + 3) \cdot 2 - 4 + (3 - 2 + 1 + 4 - 2) \cdot 2 - 5 + 1] = \\
& = [12 - 5] \cdot 2 - [5 \cdot 2 - 4 + 4 \cdot 2 - 5 + 1] = \\
& = 7 \cdot 2 - [10 - 4 + 8 - 5 + 1] = \\
& = 14 - [6 + 3 + 1] = \\
& = 14 - 10 = 4.
\end{aligned} \tag{11}$$

$$\begin{aligned}
& \{[(6 + 3 + 1) \cdot (3 + 2)] : [16 + 3 \cdot 3]\} + (1 + 3 - 2 + 1) \cdot (2 + 1) = \\
& = \{[10 \cdot 5] : [16 + 9]\} + 3 \cdot 3 = \\
& = \{50 : 25\} + 9 = \\
& = 2 + 9 = 11.
\end{aligned} \tag{12}$$

$$\begin{aligned}
& [20 : (3 \cdot 2 - 2) + 4] : (6 - 3 \cdot (6 - 3 - 1) + 3) = \\
& = [20 : (6 - 2) + 4] : (6 - 6 + 3) = \\
& = [20 : 4 + 4] : 3 = [5 + 4] : 3 = \\
& = 9 : 3 = 3.
\end{aligned} \tag{13}$$

$$\begin{aligned}
& \{[(8 + 4) + (6 - 4) \cdot (3 + 1)] : (3 + 2)\} - (3 + 1) = \\
& = \{[12 + 2 \cdot 4] : 5\} - 4 = \\
& = \{[12 + 8] : 5\} - 4 = \\
& = \{20 : 5\} - 4 = \\
& = 4 - 4 = 0.
\end{aligned} \tag{14}$$

$$\begin{aligned}
& \{12 \cdot [(5 + 2) \cdot 3 - (16 + 2 + 1)]\} : [(3 + 3 + 1 - 5 + 2) \cdot (2 + 1)] = \\
& = \{12 \cdot [7 \cdot 3 - 19]\} : [4 \cdot 3] = \\
& = \{12 \cdot [21 - 19]\} : 12 = \\
& = \{12 \cdot 2\} : 12 = \\
& = 24 : 12 = 2.
\end{aligned} \tag{15}$$

$$\begin{aligned}
& \{15 - [(10 + 3) + (2 + 11 + 3) : (2 + 2 \cdot 3) - 3]\} : [(2 + 7) : 3] = \\
& = \{15 - [13 + 16 : (2 + 6) - 3]\} : [9 : 3] = \\
& = \{15 - [13 + 16 : 8 - 3]\} : 3 = \\
& = \{15 - [13 + 2 - 3]\} : 3 = \quad (16) \\
& = \{15 - [15 - 3]\} : 3 = \\
& = \{15 - 12\} : 3 = \\
& = 3 : 3 = 1.
\end{aligned}$$

$$\begin{aligned}
& \{(2 + 7 - 3 \cdot 2) \cdot [(2 + 2) - (6 + 1 + 2 - 5 - 1)]\} : [4 - (2 \cdot 2 - 1)] = \\
& = \{(2 + 7 - 6) \cdot [4 - 3]\} : [4 - (4 - 1)] = \\
& = \{(9 - 6) \cdot 1\} : [4 - 3] = \quad (17) \\
& = \{3 \cdot 1\} : 1 = \\
& = \{3\} : 1 = 3.
\end{aligned}$$

$$\begin{aligned}
& \{[(10 - 7 + 2 + 1 + 4 - 3 - 4) \cdot (25 : 5) - 2] \cdot [(30 - 5 + 1 - 16) : (30 : 15) + \\
& \quad + 3 + 3 + 1 - 4]\} : 2 = \\
& = \{[(7 - 4) \cdot 5 - 2] \cdot [(25 + 1 - 16) : 2 + 17 - 20]\} : 2 = \\
& = \{[(3) \cdot 5 - 2] \cdot [(26 - 16) : 2 + 17 - 20]\} : 2 = \\
& = \{[3 \cdot 5 - 2] \cdot [10 : 2 + 17 - 20]\} : 2 = \\
& = \{[15 - 2] \cdot [5 + 17 - 20]\} : 2 = \\
& = \{13 \cdot [22 - 20]\} : 2 = \\
& = \{13 \cdot 2\} : 2 = \\
& = 26 : 2 = 13. \quad (18)
\end{aligned}$$

$$\begin{aligned}
& 13 - \{8 \cdot 15 - [(7 \cdot 5 + 5) : 8 + (13 + 7) : (28 : 4 - (2 + 1))]\} : 11 = \\
& = 13 - \{120 - [(35 + 5) : 8 + 20 : (7 - 3)]\} : 11 = \\
& = 13 - \{120 - [40 : 8 + 20 : 4]\} : 11 = \\
& = 13 - \{120 - [5 + 5]\} : 11 = \quad (19) \\
& = 13 - \{120 - 10\} : 11 = \\
& = 13 - 110 : 11 = \\
& = 13 - 10 = 3.
\end{aligned}$$

$$\begin{aligned}
& ((20 + 2) - 5 \cdot 4) : (4 - 2) + \{[36 : 2 + 7 \cdot 3 - 1 - (2 \cdot 8 + 6)] - 2^3\} = \\
& = (22 - 20) : 2 + \{[18 + 21 - 1 - (16 + 6)] - 8\} = \\
& = 2 : 2 + \{[39 - 1 - 22] - 8\} = \quad (20) \\
& = 1 + \{16 - 8\} = \\
& = 1 + 8 = 9.
\end{aligned}$$

$$\begin{aligned}
& (5^0 \cdot (3^0 \cdot 1) + 8) : 3 + [3^2 - (2^1 + (2 + 2)) : 2] + (2^4 + 2) : 3^2 = \\
& = (1 \cdot 1 + 8) : 3 + [9 - (2 + 4) : 2] + (16 + 2) : 9 = \\
& = (1 + 8) : 3 + [9 - 6 : 2] + 18 : 9 = \\
& = 9 : 3 + [9 - 3] + 2 = \\
& = 3 + [9 - 3] + 2 = \\
& = 3 + 6 + 2 = 11.
\end{aligned} \tag{21}$$

$$\begin{aligned}
& [(4 + 3^2 - 1) : 2^2 + (5 \cdot 9) : 3^2] : 2^2 + (21 \cdot 3) : (3^2) + 4^0 = \\
& = [(4 + 9 - 1) : 4 + 45 : 9] : 4 + 63 : 9 + 1 = \\
& = [(13 - 1) : 4 + 5] : 4 + 7 + 1 = \\
& = [12 : 4 + 5] : 4 + 8 = \\
& = [3 + 5] : 4 + 8 = \\
& = 8 : 4 + 8 = \\
& = 2 + 8 = 10.
\end{aligned} \tag{22}$$

$$\begin{aligned}
& \{[(3^2 + 11) : 2^2]^2 : (5 + 4 + 1 - 3 - 2) - 1\} \cdot (0 + 2^3) - [7^2 : (2 \cdot 3 + 1) + 2^3 + 3^0] = \\
& = \{[(9 + 11) : 4]^2 : 5 - 1\} \cdot 8 - [49 : (6 + 1) + 8 + 1] = \\
& = \{[(20) : 4]^2 : 5 - 1\} \cdot 8 - [49 : 7 + 8 + 1] = \\
& = \{5^2 : 5 - 1\} \cdot 8 - [7 + 8 + 1] = \\
& = \{25 : 5 - 1\} \cdot 8 - 16 = \\
& = \{5 - 1\} \cdot 8 - 16 = \\
& = 4 \cdot 8 - 16 = \\
& = 32 - 16 = 16.
\end{aligned} \tag{23}$$

$$\begin{aligned}
& \{[(2^0 + 2 \cdot 5^2 - 11) : 2^3 + (5 + 3)] - 7^0\} : 4 + (7 - 4) \cdot 2 + 3^2 \cdot 2 = \\
& = \{[(1 + 2 \cdot 25 - 11) : 8 + 8] - 1\} : 4 + 3 \cdot 2 + 9 \cdot 2 = \\
& = \{[(1 + 50 - 11) : 8 + 8] - 1\} : 4 + 6 + 18 = \\
& = \{[(51 - 11) : 8 + 8] - 1\} : 4 + 24 = \\
& = \{[40 : 8 + 8] - 1\} : 4 + 24 = \\
& = \{[5 + 8] - 1\} : 4 + 24 = \\
& = \{13 - 1\} : 4 + 24 = \\
& = 12 : 4 + 24 = \\
& = 3 + 24 = 27.
\end{aligned} \tag{24}$$

$$\begin{aligned}
& [(243 : 81 + 4^3 : 4 - 3) : (5 - 1^0) + 125 : 25] \cdot 2^2 : (2 + 1) = \\
& = [(3 + 64 : 4 - 3) : (5 - 1) + 5] \cdot 4 : 3 = \\
& = [(3 + 16 - 3) : 4 + 5] \cdot 4 : 3 = \\
& = [(19 - 3) : 4 + 5] \cdot 4 : 3 = \\
& = [16 : 4 + 5] \cdot 4 : 3 = \\
& = [4 + 5] \cdot 4 : 3 = \\
& = 9 \cdot 4 : 3 = \\
& = 36 : 3 = 12.
\end{aligned} \tag{25}$$

$$\begin{aligned}
& (4 + 3 \cdot 2) : (2 + 3) - ((4 + 3) - 2 \cdot 3) = \\
& = (4 + 6) : 5 - (7 - 6) = \\
& = 10 : 5 - 1 = \\
& = 2 - 1 = 1.
\end{aligned} \tag{26}$$

$$\begin{aligned}
& (2 \cdot 7) - [10 - (2 + 3 \cdot 4 : 2) : (5 - 3)] + 1 = \\
& = 14 - [10 - (2 + 12 : 2) : 2] + 1 = \\
& = 14 - [10 - (2 + 6) : 2] + 1 = \\
& = 14 - [10 - 8 : 2] + 1 = \\
& = 14 - [10 - 4] + 1 = \\
& = 14 - 6 + 1 = \\
& = 8 + 1 = 9.
\end{aligned} \tag{27}$$

$$\begin{aligned}
& [(10 + 2) - 6 \cdot (4 \cdot 2 - 7 \cdot 1)] : (1 + 6 : 3) = \\
& = [12 - 6 \cdot (8 - 7)] : (1 + 2) = \\
& = [12 - 6 \cdot 1] : 3 = \\
& = [12 - 6] : 3 = \\
& = 6 : 3 = 2.
\end{aligned} \tag{28}$$

$$\begin{aligned}
& \{1 + 4 \cdot [(16 + 2 + 1) - 3 \cdot 5 + 8 - (7 \cdot 2 - (6 + 4))] + 7\} \cdot 2 = \\
& = \{1 + 4 \cdot [19 - 15 + 8 - (14 - 10)] + 7\} \cdot 2 = \\
& = \{1 + 4 \cdot [4 + 8 - 4] + 7\} \cdot 2 = \\
& = \{1 + 4 \cdot [12 - 4] + 7\} \cdot 2 = \\
& = \{1 + 4 \cdot 8 + 7\} \cdot 2 = \\
& = \{1 + 32 + 7\} \cdot 2 = \\
& = \{33 + 7\} \cdot 2 = \\
& = 40 \cdot 2 = 80.
\end{aligned} \tag{29}$$

$$\begin{aligned}
& (2 \cdot 5 + (5 + 3)) \cdot ((30 - 2) - 3 \cdot 8) \cdot [6 \cdot 7 - (5 + 1) \cdot (5 + 2)] + 13 - 3 \cdot 4 = \\
& = (10 + 8) \cdot (28 - 24) \cdot [42 - 6 \cdot 7] + 13 - 12 = \\
& = 18 \cdot 4 \cdot [42 - 42] + 13 - 12 = \quad (30) \\
& = 18 \cdot 4 \cdot 0 + 13 - 12 = \\
& = 72 \cdot 0 + 13 - 12 = \\
& = 0 + 13 - 12 = 1.
\end{aligned}$$

$$\begin{aligned}
& [5 \cdot 3 \cdot ((10 + 4) - 5 \cdot 2) + 7 - 17] : [6 \cdot 8 - 7 + (2 + 1) \cdot (2 + 1)] = \\
& = [15 \cdot (14 - 10) + 7 - 17] : [48 - 7 + 3 \cdot 3] = \\
& = [15 \cdot 4 + 7 - 17] : [41 + 9] = \quad (31) \\
& = [60 + 7 - 17] : 50 = \\
& = [67 - 17] : 50 = \\
& = 50 : 50 = 1.
\end{aligned}$$

$$\begin{aligned}
& [(21 + 3) + (18 - 8 : 4) : ((34 - 3) - 9 \cdot 3)] : [(1 + 7) : 8 + 3] - 7 = \\
& = [24 + (18 - 2) : (31 - 27)] : [8 : 8 + 3] - 7 = \\
& = [24 + 16 : 4] : [1 + 3] - 7 = \quad (32) \\
& = [24 + 4] : 4 - 7 = \\
& = 28 : 4 - 7 = \\
& = 7 - 7 = 0.
\end{aligned}$$

$$\begin{aligned}
& [6^2 - (12 - 6) \cdot 5 + 34] : [(3^2 - 0) \cdot 5 - 6 \cdot (8 - 2 \cdot 3) + (5 + 2)] = \\
& = [36 - 6 \cdot 5 + 34] : [9 \cdot 5 - 6 \cdot (8 - 6) + 7] = \\
& = [36 - 30 + 34] : [45 - 6 \cdot 2 + 7] = \quad (33) \\
& = [6 + 34] : [45 - 12 + 7] = \\
& = 40 : [33 + 7] = \\
& = 40 : 40 = 1.
\end{aligned}$$

$$\begin{aligned}
& 5^2 : 5 : (7 - 2) + (30 + 9) - 5 \cdot 4 \cdot (3 - 2) \cdot (7 \cdot 6 - 5 \cdot 8) = \\
& = 25 : 5 : 5 + 39 - 20 \cdot 1 \cdot (42 - 40) = \\
& = 5 : 5 + 39 - 20 \cdot 2 = \quad (34) \\
& = 1 + 39 - 40 = \\
& = 40 - 40 = 0.
\end{aligned}$$

$$\begin{aligned}
& [2^2 + 2 \cdot (7 - 2 + 1) : 3] : 4^0 + 2^3 + 3^3 : 3^2 = \\
& = [4 + 2 \cdot (5 + 1) : 3] : 0 + 8 + 27 : 9 = \\
& = [4 + 2 \cdot 6 : 3] : 8 + 3 = \\
& = [4 + 12 : 3] : 8 + 3 = \quad (35) \\
& = [4 + 4] : 8 + 3 = \\
& = 8 : 8 + 3 = \\
& = 1 + 3 = 4.
\end{aligned}$$

$$\begin{aligned}
& 3^3 : (6^0 + 3^2 - 1) + 2 \cdot 2^2 \cdot 2^3 : 2^4 - (2 \cdot 5 - 3) = \\
& = 27 : 9 + 2 \cdot 4 \cdot 8 : 16 - (10 - 3) = \\
& = 3 + 8 \cdot 8 : 16 - 7 = \\
& = 3 + 64 : 16 - 7 = \\
& = 3 + 4 - 7 = \\
& = 7 - 7 = 0.
\end{aligned} \tag{36}$$

$$\begin{aligned}
& 22 - \{2^3 + [(16 + 4) - (2^2 + 3) \cdot (1 + 3^3 : 3^3)] : (2 + 1)\} = \\
& = 22 - \{8 + [20 - (4 + 3) \cdot (1 + 27 : 27)] : 3\} = \\
& = 22 - \{8 + [20 - 7 \cdot (1 + 1)] : 3\} = \\
& = 22 - \{8 + [20 - 7 \cdot 2] : 3\} = \\
& = 22 - \{8 + [20 - 14] : 3\} = \\
& = 22 - \{8 + 6 : 3\} = \\
& = 22 - \{8 + 2\} = \\
& = 22 - 10 = 12.
\end{aligned} \tag{37}$$

$$\begin{aligned}
& \{3 + [2^3 - 3 \cdot 2 + (3 + 1) - (8 - 6) \cdot (3 - 2)] \cdot (10 - 2 \cdot 2^2)\} \cdot (5 - 3) = \\
& = \{3 + [8 - 6 + 4 - 2 \cdot 1] \cdot (10 - 2 \cdot 4)\} \cdot 2 = \\
& = \{3 + [2 + 4 - 2] \cdot (10 - 8)\} \cdot 2 = \\
& = \{3 + 4 \cdot 2\} \cdot 2 = \\
& = \{3 + 8\} \cdot 2 = \\
& = 11 \cdot 2 = 22.
\end{aligned} \tag{38}$$

$$\begin{aligned}
& \{5^3 : (5^2 \cdot 5^4 : 5^5) + (7 - 4) - [2^3 \cdot 2 : (2^2)^2]\} : 3^3 = \\
& = \{5^3 : (5^6 : 5^5) + 3 - [2^4 : 2^4]\} : (3 \cdot 9) = \\
& = \{5^3 : 5 + 3 - 2^0\} : 27 = \\
& = \{5^2 + 3 - 1\} : 27 = \\
& = \{25 + 3 - 1\} : 27 = \\
& = \{28 - 1\} : 27 = \\
& = 27 : 27 = 1.
\end{aligned} \tag{39}$$

$$\begin{aligned}
& (1 + 2 \cdot 3 - 5)^3 : (2 + 3^3 : (6 + 3) - 2^2) + (2^2)^3 : 2^5 = \\
& = (1 + 6 - 5)^3 : (2 + 27 : 9 - 4) + 2^6 : 2^5 = \\
& = (7 - 5)^3 : (2 + 3 - 4) + 2 = \\
& = 2^3 : (5 - 4) + 2 = \\
& = 8 : 1 + 2 = \\
& = 8 + 2 = 10.
\end{aligned} \tag{40}$$

$$\begin{aligned}
& (2^5 : 2^3 + 6) : 5 + 3 \cdot (4 \cdot 12 - 100 : 5 - 20) - 12 : 4 + (5 - 3) = \\
& = (2^2 + 6) : 5 + 3 \cdot (48 - 20 - 20) - 3 + 2 = \\
& = (4 + 6) : 5 + 3 \cdot (28 - 20) - 3 + 2 = \\
& = 10 : 5 + 3 \cdot 8 - 3 + 2 = \tag{41} \\
& = 2 + 24 - 3 + 2 = \\
& = 26 - 3 + 2 = \\
& = 23 + 2 = 25.
\end{aligned}$$

$$\begin{aligned}
& \{5 \cdot [60 \cdot 2^2 - 2 \cdot 7 + 4 \cdot ((10 + 3) - 6 \cdot 2) - 5 \cdot (2 \cdot 5 + 2)] - 800\} : (47 + 3) = \\
& = \{5 \cdot [60 \cdot 4 - 14 + 4 \cdot (13 - 12) - 5 \cdot (10 + 2)] - 800\} : 50 = \\
& = \{5 \cdot [240 - 14 + 4 \cdot 1 - 5 \cdot 12] - 800\} : 50 = \\
& = \{5 \cdot [240 - 14 + 4 - 60] - 800\} : 50 = \\
& = \{5 \cdot [226 + 4 - 60] - 800\} : 50 = \\
& = \{5 \cdot [230 - 60] - 800\} : 50 = \\
& = \{5 \cdot 170 - 800\} : 50 = \\
& = \{850 - 800\} : 50 = \\
& = 50 : 50 = 1. \tag{42}
\end{aligned}$$

$$\begin{aligned}
& \{2^4 \cdot [260 - 3^2 \cdot 23 - ((14 + 3) - 3 \cdot 4) \cdot 10] - (4 + 1) \cdot 2^3\} \cdot 2 : 2^4 = \\
& = \{16 \cdot [260 - 9 \cdot 23 - (17 - 12) \cdot 10] - 5 \cdot 8\} \cdot 2 : 16 = \\
& = \{16 \cdot [260 - 207 - 5 \cdot 10] - 40\} \cdot 2 : 16 = \\
& = \{16 \cdot [53 - 50] - 40\} \cdot 2 : 16 = \tag{43} \\
& = \{16 \cdot 3 - 40\} \cdot 2 : 16 = \\
& = \{48 - 40\} \cdot 2 : 16 = \\
& = 8 \cdot 2 : 16 = \\
& = 16 : 16 = 1.
\end{aligned}$$

$$\begin{aligned}
& [5 \cdot 3^2 - 2 \cdot (6 + 3) + 150 - 3^2 \cdot 2^2 - 12 \cdot 5] : 3^3 + 3^0 - 1 = \\
& = [5 \cdot 9 - 2 \cdot 9 + 150 - 9 \cdot 4 - 60] : 27 + 1 - 1 = \\
& = [45 - 18 + 150 - 36 - 60] : 27 + 0 = \tag{44} \\
& = [27 + 114 - 60] : 27 = \\
& = [141 - 60] : 27 = \\
& = 81 : 27 = 3.
\end{aligned}$$

$$\begin{aligned}
(8-7) + \{1 + [1 + (1 + 2^5 : 2^2 \cdot 2^3 - 2^5 : (2^2 \cdot 2^3))] : (4+1)\} : 7 &= \\
= 1 + \{1 + [1 + (1 + 2^3 \cdot 8 - 32 : (2^5))] : 5\} : 7 &= \\
= 1 + \{1 + [1 + (1 + 8 \cdot 8 - 32 : 32)] : 5\} : 7 &= \\
= 1 + \{1 + [1 + (1 + 64 - 1)] : 5\} : 7 &= \\
= 1 + \{1 + [1 + (65 - 1)] : 5\} : 7 &= \\
= 1 + \{1 + [1 + 64] : 5\} : 7 &= \\
= 1 + \{1 + 65 : 5\} : 7 &= \\
= 1 + \{1 + 13\} : 7 &= \\
= 1 + 14 : 7 &= \\
= 1 + 2 = 3. &
\end{aligned} \tag{45}$$

$$\begin{aligned}
(5-2^2)^2 + [(5^2-2^2) : (8-1)]^2 : [3^3 : (3 \cdot 3)] + 3^3 : 3 \cdot 3 &= \\
= (5-4)^2 + [(25-4) : 7]^2 : [27 : 9] + 27 : 3 \cdot 3 &= \\
= 1^2 + [21 : 7]^2 : 3 + 9 \cdot 3 &= \\
= 1 + 3^2 : 3 + 27 &= \\
= 1 + 9 : 3 + 27 &= \\
= 1 + 3 + 27 = 31. &
\end{aligned} \tag{46}$$

$$\begin{aligned}
[(3 \cdot 4) + (2^2 \cdot 2 - 5^2 : 5)^3 : (3^2 : 3)^2] : (1 + 2^2) &= \\
= [12 + (4 \cdot 2 - 25 : 5)^3 : (9 : 3)^2] : (1 + 4) &= \\
= [12 + (8 - 5)^3 : (3)^2] : 5 &= \\
= [12 + (3)^3 : 9] : 5 &= \\
= [12 + 27 : 9] : 5 &= \\
= [12 + 3] : 5 &= \\
= 15 : 5 = 3. &
\end{aligned} \tag{47}$$

$$\begin{aligned}
\{(3+2+1-2 \cdot 3+3^0-1+2^2 : 2)^2 - [5-1 \cdot (2^5 : 2^4)]^2\}^2 &= \\
= \{(5+1-6+1-1+4 : 2)^2 - [5-1 \cdot (2)^2]\}^2 &= \\
= \{(6-6+0+2)^2 - [5-1 \cdot 4]\}^2 &= \\
= \{(0+2)^2 - [5-4]\}^2 &= \\
= \{2^2 - 1\}^2 &= \\
= \{4-1\}^2 &= \\
= 3^2 = 9. &
\end{aligned} \tag{48}$$

$$\begin{aligned}
& \left\{ (3 \cdot 5) - \left[(7-4) + 3^3 : 3^2 \cdot (3^4 : 3^3)^2 \right] : \left[(3^2)^2 : 3^3 \right] \right\} \cdot 2 - 2^3 = \\
& = \left\{ 15 - \left[3 + 3 \cdot (3)^2 \right] : \left[3^4 : 3^3 \right] \right\} \cdot 2 - 8 = \\
& = \left\{ 15 - \left[3 + 3 \cdot 9 \right] : 3 \right\} \cdot 2 - 8 = \\
& = \left\{ 15 - \left[3 + 27 \right] : 3 \right\} \cdot 2 - 8 = \quad (49) \\
& = \left\{ 15 - 30 : 3 \right\} \cdot 2 - 8 = \\
& = \left\{ 15 - 10 \right\} \cdot 2 - 8 = \\
& = 5 \cdot 2 - 8 = \\
& = 10 - 8 = 2.
\end{aligned}$$

$$\begin{aligned}
& \left[(7-5) + (2^2 \cdot 2)^2 : (2^2)^3 \right]^3 : \left[(3^2)^2 : 27 \right]^2 = \\
& = \left[2 + (4 \cdot 2)^2 : (4)^3 \right]^3 : \left[3^4 : 3^3 \right]^2 = \\
& = \left[2 + (8)^2 : 64 \right]^3 : 3^2 = \quad (50) \\
& = \left[2 + 64 : 64 \right]^3 : 9 = \\
& = \left[2 + 1 \right]^3 : 9 = \\
& = 3^3 : 9 = 27 : 9 = 3.
\end{aligned}$$

$$\begin{aligned}
& \left[3 + 2^4 \cdot (2^4 - (4 \cdot 4))^2 + (5^2 - (5 \cdot 4))^{12} : 25^6 \right] : 2^2 = \\
& = \left[3 + 16 \cdot (16 - 16)^2 + (25 - 20)^{12} : 25^6 \right] : 4 = \\
& = \left[3 + 16 \cdot 0^2 + 5^{12} : 25^6 \right] : 4 = \\
& = \left[3 + 16 \cdot 0 + 5^{12} : (5^2)^6 \right] : 4 = \quad (51) \\
& = \left[3 + 0 + 5^{12} : 5^{12} \right] : 4 = \\
& = \left[3 + 5^0 \right] : 4 = \\
& = \left[3 + 1 \right] : 4 = 4 : 4 = 1.
\end{aligned}$$

$$\begin{aligned}
& \left\{ (7^4 : 7^2 + 1) : (5^3 : 5) + \left[3^2 - (9 - 2^2) \right]^2 \right\} : (5 \cdot 2 - (10 - 9)) = \\
& = \left\{ (7^2 + 1) : 5^2 + \left[3^2 - (9 - 4) \right]^2 \right\} : (10 - 1) = \\
& = \left\{ (49 + 1) : 25 + \left[9 - 5 \right]^2 \right\} : 9 = \quad (52) \\
& = \left\{ 50 : 25 + \left[4 \right]^2 \right\} : 9 = \\
& = \left\{ 2 + 16 \right\} : 9 = \\
& = 18 : 9 = 2.
\end{aligned}$$

$$\begin{aligned}
& \left\{ (3^2 \cdot 2^3 - 2^4 \cdot 3) : [(2^4 + 2 \cdot 7) : 3 - 2] \right\} : (30 : 10) = \\
& = \left\{ (9 \cdot 8 - 16 \cdot 3) : [(16 + 2 \cdot 7) : 3 - 2] \right\} : 3 = \\
& = \left\{ (72 - 16 \cdot 3) : [(16 + 14) : 3 - 2] \right\} : 3 = \quad (53) \\
& = \left\{ (72 - 48) : [30 : 3 - 2] \right\} : 3 = \\
& = \left\{ 24 : [10 - 2] \right\} : 3 = \\
& = \left\{ 24 : 8 \right\} : 3 = 3 : 3 = 1.
\end{aligned}$$

$$\begin{aligned}
& \left\{ (3 \cdot 6) : (1 + 2^3 : 2^2)^2 + [(5 \cdot 2) - (1 + 2^3)]^2 \right\} : [(1 \cdot 5 - 2^2)^2 + 2] = \\
& = \left\{ 18 : (1 + 2)^2 + [10 - (1 + 8)]^2 \right\}^2 : [(5 - 4)^2 + 2] = \\
& = \left\{ 18 : 3^2 + [10 - 9]^2 \right\}^2 : [1^2 + 2] = \quad (54) \\
& = \left\{ 18 : 9 + 1^2 \right\}^2 : [1 + 2] = \\
& = \left\{ 2 + 1 \right\}^2 : 3 = \\
& = 3^2 : 3 = 9 : 3 = 3.
\end{aligned}$$

$$\begin{aligned}
& \left\{ 5 \cdot [(6 + 4) - 2 \cdot (3 \cdot 7 - 5 \cdot 4)^2]^2 \right\} : (8 \cdot 10) + [(3 \cdot 5 + 4) : (3 + 8 \cdot 2)] = \\
& = \left\{ 5 \cdot [10 - 2 \cdot (21 - 20)^2]^2 \right\} : 80 + [(15 + 4) : (3 + 16)] = \\
& = \left\{ 5 \cdot [10 - 2 \cdot 1^2]^2 \right\} : 80 + [19 : 19] = \\
& = \left\{ 5 \cdot [10 - 2 \cdot 1]^2 \right\} : 80 + 1 = \quad (55) \\
& = \left\{ 5 \cdot [10 - 2]^2 \right\} : 80 + 1 = \\
& = \left\{ 5 \cdot 8^2 \right\} : 80 + 1 = \\
& = \left\{ 5 \cdot 64 \right\} : 80 + 1 = \\
& = 320 : 80 + 1 = 4 + 1 = 5.
\end{aligned}$$

$$\begin{aligned}
& \left\{ (5 \cdot 9) + 6^2 \cdot (15 - 3^2) \cdot [9 - 2 \cdot (18 - 2^4)^2] - 12^2 \right\} : \left[(3^2 \cdot 2^2) + (18 : 6) \right] = \\
& = \left\{ 45 + 36 \cdot (15 - 9) \cdot [9 - 2 \cdot (18 - 16)^2] - 144 \right\} : [(9 \cdot 4) + 3] = \\
& = \left\{ 45 + 36 \cdot 6 \cdot [9 - 2 \cdot 2^2] - 144 \right\} : [36 + 3] = \\
& = \left\{ 45 + 216 \cdot [9 - 2 \cdot 4] - 144 \right\} : 39 = \\
& = \left\{ 45 + 216 \cdot [9 - 8] - 144 \right\} : 39 = \\
& = \left\{ 45 + 216 \cdot 1 - 144 \right\} : 39 = \\
& = \left\{ 45 + 216 - 144 \right\} : 39 = \\
& = \left\{ 261 - 144 \right\} : 39 = 117 : 39 = 3.
\end{aligned} \tag{56}$$

$$\begin{aligned}
& \left\{ [3 \cdot (6 - 2 \cdot 3)]^2 + (2 \cdot 10) : (3 \cdot 2^2 - 3^2 - 1)^2 \right\} : [5 \cdot (4 \cdot 2 - 7)] = \\
& = \left\{ [3 \cdot (6 - 6)]^2 + 20 : (3 \cdot 4 - 9 - 1)^2 \right\} : [5 \cdot (8 - 7)] = \\
& = \left\{ [3 \cdot 0]^2 + 20 : (12 - 9 - 1)^2 \right\} : [5 \cdot 1] = \\
& = \left\{ 0^2 + 20 : (3 - 1)^2 \right\} : 5 = \\
& = \left\{ 0 + 20 : 2^2 \right\} : 5 = \\
& = \left\{ 20 : 4 \right\} : 5 = \\
& = 5 : 5 = 1.
\end{aligned} \tag{57}$$

$$\begin{aligned}
& [15 - (4 + 9 \cdot 2 - 7) + 2^2 \cdot 7] : \{ 2^4 + [10 - (2^3 + 10 - 9)] - (3 \cdot 5) \} = \\
& = [15 - (4 + 18 - 7) + 4 \cdot 7] : \{ 16 + [10 - (8 + 10 - 9)] - 15 \} = \\
& = [15 - (22 - 7) + 28] : \{ 16 + [10 - (18 - 9)] - 15 \} = \\
& = [15 - 15 + 28] : \{ 16 + [10 - 9] - 15 \} = \\
& = [0 + 28] : \{ 16 + [10 - 9] - 15 \} = \\
& = 28 : \{ 16 + 1 - 15 \} = \\
& = 28 : \{ 17 - 15 \} = 28 : 2 = 14.
\end{aligned} \tag{58}$$

$$\begin{aligned}
& \left\{ [(9 \cdot 5 - 20) : 5 + 7] \cdot 2 + 6 \right\} : \{ (4 + 1) \cdot [5 \cdot 7 - 3 \cdot (14 - 3)] \} = \\
& = \left\{ [(45 - 20) : 5 + 7] \cdot 2 + 6 \right\} : \{ 5 \cdot [35 - 3 \cdot 11] \} = \\
& = \left\{ [25 : 5 + 7] \cdot 2 + 6 \right\} : \{ 5 \cdot [35 - 33] \} = \\
& = \left\{ [5 + 7] \cdot 2 + 6 \right\} : \{ 5 \cdot 2 \} = \\
& = \left\{ 12 \cdot 2 + 6 \right\} : 10 = \\
& = \left\{ 24 + 6 \right\} : 10 = 30 : 10 = 3.
\end{aligned} \tag{59}$$

$$\begin{aligned}
& 9 \cdot \{(70+3) - 7 \cdot [(11+3) - 2 \cdot 5 + 3 \cdot (8-2 \cdot 3)] - 2\} - 8 + 2^4 : 2^3 = \\
& = 9 \cdot \{73 - 7 \cdot [14 - 10 + 3 \cdot (8-6)] - 2\} - 8 + 2 = \\
& = 9 \cdot \{73 - 7 \cdot [4 + 3 \cdot 2] - 2\} - 8 + 2 = \\
& = 9 \cdot \{73 - 7 \cdot [4 + 6] - 2\} - 8 + 2 = \\
& = 9 \cdot \{73 - 7 \cdot 10 - 2\} - 8 + 2 = \\
& = 9 \cdot \{73 - 70 - 2\} - 8 + 2 = \\
& = 9 \cdot \{3 - 2\} - 8 + 2 = \\
& = 9 \cdot 1 - 8 + 2 = 9 - 8 + 2 = 1 + 2 = 3.
\end{aligned} \tag{60}$$

$$\begin{aligned}
& \{[2 \cdot (7-3 \cdot 2) : (5-2 \cdot 2)]^3 \cdot (3 \cdot 4 - 7)\} : [(2^2 + 1)^2 : (3+2)] = \\
& = \{[2 \cdot (7-6) : (5-4)]^3 \cdot (12-7)\} : [(4+1)^2 : 5] = \\
& = \{[2 \cdot 1 : 1]^3 \cdot 5\} : [5^2 : 5] = \\
& = \{[2 \cdot 1]^3 \cdot 5\} : [25 : 5] = \\
& = \{2^3 \cdot 5\} : 5 = \\
& = \{8 \cdot 5\} : 5 = 40 : 5 = 8.
\end{aligned} \tag{61}$$

$$\begin{aligned}
& \{[7 \cdot (8-5) - 2 \cdot 3] : (1+2)\} - [(3 \cdot 2 + 5) - (5 \cdot 2)] = \\
& = \{[7 \cdot 3 - 6] : 3\} - [(6+5) - 10] = \\
& = \{[21 - 6] : 3\} - [11 - 10] = \\
& = \{15 : 3\} - 1 = 5 - 1 = 4.
\end{aligned} \tag{62}$$

$$\begin{aligned}
& [(8-7) \cdot 7 + 5] : [3 - (1-1)] + [15 - 3 \cdot (15-12)] = \\
& = [1 \cdot 7 + 5] : [3 - 0] + [15 - 3 \cdot 3] = \\
& = [7 + 5] : 3 + [15 - 9] = \\
& = 12 : 3 + [15 - 9] = \\
& = 4 + 6 = 10.
\end{aligned} \tag{63}$$

$$\begin{aligned}
& \{[2 \cdot (12-2) - 15] \cdot [3 + 4 \cdot (1+2) - 14] + 2\} : (4+3) = \\
& = \{[2 \cdot 10 - 15] \cdot [3 + 4 \cdot 3 - 14] + 2\} : 7 = \\
& = \{[20 - 15] \cdot [3 + 12 - 14] + 2\} : 7 = \\
& = \{5 \cdot [15 - 14] + 2\} : 7 = \\
& = \{5 \cdot 1 + 2\} : 7 = \\
& = \{5 + 2\} : 7 = \\
& = 7 : 7 = 1.
\end{aligned} \tag{64}$$

$$\begin{aligned}
& [(10+3-9) \cdot (3 \cdot 2 - (3+1))] : [(12+28-30-6) \cdot (40-10+2-30)] = \\
& = [(13-9) \cdot (6-4)] : [(38-30-6) \cdot (30+2-30)] = \\
& = [4 \cdot 2] : [2 \cdot (8-6)] = \\
& = 8 : [2 \cdot 2] = \\
& = 8 : 4 = 2.
\end{aligned} \tag{65}$$

$$\begin{aligned}
& (16 \cdot 2 - (2 \cdot 9)) : [48 : (69 : 3 + 1)] \cdot \{18 - [40 - (9 \cdot 8 - 2) : 2] - (5 \cdot 2)\} = \\
& = (32 - 18) : [48 : (23 + 1)] \cdot \{18 - [40 - (72 - 2) : 2] - 10\} = \\
& = 14 : [48 : 24] \cdot \{18 - [40 - 70 : 2] - 10\} = \\
& = 14 : 2 \cdot \{18 - [40 - 35] - 10\} = \\
& = 7 \cdot \{18 - 5 - 10\} = \\
& = 7 \cdot \{13 - 10\} = 7 \cdot 3 = 21.
\end{aligned}$$

(66)

$$\begin{aligned}
& (2 \cdot 3 - 12 : 4) - \{4 + 3 \cdot [(42 : 3 + 2) - (8 \cdot 6 : 3) + \\
& \quad + 4]\} : (20 - 16 : 4) = \\
& = (6 - 3) - \{4 + 3 \cdot [(14 + 2) - (48 : 3) + 4]\} : (20 - 4) = \\
& = 3 - \{4 + 3 \cdot [16 - 16 + 4]\} : 16 = \\
& = 3 - \{4 + 3 \cdot [0 + 4]\} : 16 = \\
& = 3 - \{4 + 3 \cdot 4\} : 16 = \\
& = 3 - \{4 + 12\} : 16 = 3 - 16 : 16 = 3 - 1 = 2.
\end{aligned}$$

(67)

$$\begin{aligned}
& (7 \cdot 9) - [48 - ((2 \cdot 7) + 2 \cdot 16)] \cdot (2 \cdot 12) - (2 + 28 : 4) - \\
& \quad + 18 : (14 - 48 : 24 - 56 : 8 - 2) = \\
& = 63 - [48 - (14 + 32)] \cdot 24 - (2 + 7) - 18 : (14 - 2 - 7 - 2) = \\
& = 63 - [48 - 46] \cdot 24 - 9 - 18 : (12 - 7 - 2) = \\
& = 63 - 2 \cdot 24 - 9 - 18 : (5 - 2) = \\
& = 63 - 48 - 9 - 18 : 3 = \\
& = 15 - 9 - 6 = 6 - 6 = 0.
\end{aligned}$$

(68)

$$\begin{aligned}
& \{2 + 2 \cdot 6 \cdot [(4 \cdot 9) - (4 + 7 \cdot 4) + (40 + 8) : (4 + 4 \cdot 11)] + \\
& \quad + (100 : 2) : (45 : 3 + 35) : \{21 - [140 : 7 - (2 + 2 \cdot 2)]\} = \\
& = \{2 + 12 \cdot [36 - (4 + 28) + 48 : (4 + 44)] + 50 : (15 + \\
& \quad + 35)\} : \{21 - [20 - (2 + 4)]\} = \\
& = \{2 + 12 \cdot [36 - 32 + 48 : 48] + 50 : 50\} : \{21 - [20 - 6]\} = \\
& = \{2 + 12 \cdot [4 + 1] + 1\} : \{21 - 14\} = \\
& = \{2 + 12 \cdot 5 + 1\} : 7 = \\
& = \{2 + 60 + 1\} : 7 = \\
& = \{62 + 1\} : 7 = 63 : 7 = 9.
\end{aligned}$$

(69)

$$\begin{aligned}
& \{[135 + 3 \cdot 5 + (4 + 3 \cdot 7) \cdot 2] : 8\} : \{2 + [8 \cdot 11 - \\
& \quad + (5 + 7 \cdot 5)] : (3 + 1) + (39 : 3 - 2) + (1 - 3^0)\} = \\
& = \{[135 + 15 + (4 + 21) \cdot 2] : 8\} : \{2 + [88 - (5 + 35)] : 4 + (13 - 2) + 0\} = \\
& = \{[135 + 15 + 25 \cdot 2] : 8\} : \{2 + [88 - 40] : 4 + 11\} = \\
& = \{[150 + 50] : 8\} : \{2 + 48 : 4 + 11\} = \\
& = \{200 : 8\} : \{2 + 12 + 11\} = \\
& = 25 : \{14 + 11\} = 25 : 25 = 1.
\end{aligned}$$

(70)

$$\begin{aligned}
& \{((5 \cdot 5) - 9) : 4 + 40 : [20 - (2 + 3 \cdot 4) : 7 - 4 \cdot 3 - 2] - \\
& \quad + 18 : ((6 \cdot 8) : 4 - 6)\} \cdot 10 : [18 - \\
& \quad + (21 : 7 + 60 : 15) + (44 \cdot 2) : 2^3] = \\
& = \{16 : 4 + 40 : [20 - (2 + 12) : 7 - 12 - 2] - \\
& \quad + 18 : (12 - 6)\} \cdot 10 : [18 - (3 + 4) + 88 : 8] = \\
= \{4 + 40 : [20 - 14 : 7 - 12 - 2] - 18 : 6\} \cdot 10 : [18 - 7 + 11] = \\
& = \{4 + 40 : [20 - 2 - 12 - 2] - 3\} \cdot 10 : [11 + 11] = \tag{71} \\
& = \{4 + 40 : [18 - 12 - 2] - 3\} \cdot 10 : 22 = \\
& = \{4 + 40 : [6 - 2] - 3\} \cdot 10 : 22 = \\
& = \{4 + 40 : 4 - 3\} \cdot 10 : 22 = \\
& = \{4 + 10 - 3\} \cdot 10 : 22 = \\
& = \{14 - 3\} \cdot 10 : 22 = \\
& = 11 \cdot 10 : 22 = 110 : 22 = 5.
\end{aligned}$$

$$\begin{aligned}
& \{[(53^2 - 45^2) : 7 + 3 \cdot 2^4] : [(21^2 - 8 \cdot 7) : 7 - 17 \cdot 3]^2 + \\
& \quad + 2 \cdot 5^2\}^2 : (2^2 + 2^3 + 2^4 + 2^5) + (2 \cdot 5) \cdot (3 + 1) = \\
= \{[(2809 - 2025) : 7 + 3 \cdot 16] : [(441 - 56) : 7 - 51]^2 + \\
& \quad + 2 \cdot 25\}^2 : (4 + 8 + 16 + 32) + 10 \cdot 4 = \\
= \{[784 : 7 + 48] : [385 : 7 - 51]^2 + 50\}^2 : (12 + 48) + 40 = \tag{72} \\
& = \{[112 + 48] : [55 - 51]^2 + 50\}^2 : 60 + 40 = \\
& = \{160 : [4]^2 + 50\}^2 : 60 + 40 = \\
& = \{160 : 16 + 50\}^2 : 60 + 40 = \\
& = \{10 + 50\}^2 : 60 + 40 = \\
& = 60^2 : 60 + 40 = 60^1 + 40 = 60 + 40 = 100.
\end{aligned}$$

$$\begin{aligned}
& 40 : (2^3 - 2 + 2^2) + (9 \cdot 7 + 7) \cdot 6^0 - 28 : 2^2 = \\
& = 40 : (8 - 2 + 4) + (63 + 7) \cdot 1 - 28 : 4 = \\
& = 40 : (6 + 4) + 70 \cdot 1 - 7 = \tag{73} \\
& = 40 : 10 + 70 - 7 = \\
& = 4 + 63 = 67.
\end{aligned}$$

$$\begin{aligned}
(26 + 4^0) - \left\{ \left[(4^2)^3 \right]^2 \right\}^0 - 2^4 - \left[(5^2)^1 \right]^2 : 5^3 &= \\
= 27 - \left\{ \left[4^6 \right]^2 \right\}^0 - 16 - \left[25^1 \right]^2 : 5^3 &= \\
= 27 - \left\{ 4^{12} \right\}^0 - 16 - \left[25 \right]^2 : 5^3 &= \quad (74) \\
= 27 - 4^0 - 16 - \left[(5)^2 \right]^2 : 5^3 &= \\
= 27 - 1 - 16 - 5^4 : 5^3 &= \\
= 26 - 16 - 5^1 = 10 - 5 = 5. &
\end{aligned}$$

$$\begin{aligned}
4 \cdot 3 - (3 \cdot 3 + 1) + (2^2 \cdot 3^2)^0 + 15^3 : 5^3 - (3^2)^2 : 3^3 &= \\
= 12 - (9 + 1) + (2^2 \cdot 3^2)^0 + 15^3 : 5^3 - (3^2)^2 : 3^3 &= \\
= 12 - (10) + (4 \cdot 9)^0 + 3^3 - 3^4 : 3^3 &= \quad (75) \\
= 12 - 10 + 36^0 + 3^3 - 3^1 &= \\
= 2 + 1 + 27 - 3 = 3 + 24 = 27. &
\end{aligned}$$

$$\begin{aligned}
(2^2 \cdot 3^6 \cdot 2^4) : (3^3 \cdot 2^2 \cdot 2^4 \cdot 3^3) - (4^1 - 2^0 - 2) &= \\
= (2^6 \cdot 3^6) : (3^6 \cdot 2^6) - (4 - 1 - 2) &= \quad (76) \\
= 6^6 : 6^6 - 1 = 6^0 - 1 = 1 - 1 = 0. &
\end{aligned}$$

$$\begin{aligned}
[(9-6)^3 \cdot (5 \cdot 1)^3] : [(6^8 : 6^4) : 3^4 - 1]^2 &= \\
= [3^3 \cdot 5^3] : [6^4 : 3^4 - 1]^2 &= \\
= [15^3] : [2^4 - 1]^2 &= \quad (77) \\
= 15^3 : [16 - 1]^2 &= \\
= 15^3 : 15^2 = 15^1 = 15. &
\end{aligned}$$

$$\begin{aligned}
[(30 : 6 \cdot 2)^3 : 10^2 + 2 \cdot 2^2] : (6)^1 &= \\
= [(5 \cdot 2)^3 : 10^2 + 8] : 6 &= \\
= [10^3 : 10^2 + 8] : 6 &= \quad (78) \\
= [10^1 + 8] : 6 &= \\
= [10 + 8] : 6 &= \\
= 18 : 6 = 3. &
\end{aligned}$$

$$\begin{aligned}
10 \cdot 2 - 2^2 \cdot 2^3 : 2 + (3^2 \cdot 2^2) : (2 \cdot 3) - (2^4 \cdot 3^4)^0 &= \\
= 20 - 2^5 : 2 + 6^2 : 6 - (6^4)^0 &= \quad (79) \\
= 20 - 32 : 2 + 6^1 - 6^0 &= \\
= 20 - 16 + 6 - 1 = 4 + 5 = 9. &
\end{aligned}$$

$$\begin{aligned}
(4+3) \cdot \left[(5^2 \cdot 5^3)^3 : 5^{14} \right] - 3 \cdot 8^0 - 6^5 : 3^5 &= \\
= 7 \cdot \left[(5^5)^3 : 5^{14} \right] - 3 \cdot 1 - 2^5 &= \\
= 7 \cdot \left[5^{15} : 5^{14} \right] - 3 - 2^5 &= \quad (80) \\
= 7 \cdot 5^1 - 3 - 2^5 &= \\
= 7 \cdot 5 - 3 - 2^5 &= \\
= 35 - 3 - 2^5 = 32 - 32 = 0. &=
\end{aligned}$$

$$\begin{aligned}
(30-2) + (2^6 : 2^4)^0 - 25^2 : 5^2 + (7 \cdot 3 - (2 \cdot 10)) \cdot (5^3 : 5^2) &= \\
= 28 + (2^2)^0 - 5^2 + (21 - 20) \cdot 5^1 &= \\
= 28 + (4)^0 - 5^2 + 1 \cdot 5 &= \quad (81) \\
= 28 + 1 - 25 + 5 &= \\
= 29 - 25 + 5 = 4 + 5 = 9. &=
\end{aligned}$$

$$\begin{aligned}
\left[(2^2 \cdot 2^4) : 2^3 \right]^2 : 2^4 + (37-2) - 3^2 \cdot 2^2 + (5^2 \cdot 3^2)^0 &= \\
= \left[2^6 : 2^3 \right]^2 : 2^4 + 35 - 6^2 + (15^2)^0 &= \\
= \left[2^3 \right]^2 : 2^4 + 35 - 36 + 15^0 &= \quad (82) \\
= 2^6 : 2^4 + 35 - 36 + 1 &= \\
= 2^2 + 35 - 36 + 1 &= \\
= 4 + 35 - 36 + 1 = 39 - 36 + 1 = 3 + 1 = 4. &=
\end{aligned}$$

$$\begin{aligned}
27 - \left\{ 3 \cdot 2^3 - \left[(5 \cdot 2^2 - 7)^2 : 13 + 12 : (3 \cdot 2^3 - 2^2 \cdot (3^0 \cdot 3)) \right] : 2 \right\}^2 : 17^2 &= \\
= 27 - \left\{ 3 \cdot 8 - \left[(5 \cdot 4 - 7)^2 : 13 + 12 : (3 \cdot 8 - 4 \cdot 3) \right] : 2 \right\}^2 : 17^2 &= \\
= 27 - \left\{ 24 - \left[(20 - 7)^2 : 13 + 12 : (24 - 12) \right] : 2 \right\}^2 : 17^2 &= \\
= 27 - \left\{ 24 - \left[13^2 : 13 + 12 : 12 \right] : 2 \right\}^2 : 17^2 &= \\
= 27 - \left\{ 24 - \left[13^1 + 1 \right] : 2 \right\}^2 : 17^2 &= \\
= 27 - \left\{ 24 - \left[13 + 1 \right] : 2 \right\}^2 : 17^2 &= \\
= 27 - \left\{ 24 - 14 : 2 \right\}^2 : 17^2 &= \\
= 27 - \left\{ 24 - 7 \right\}^2 : 17^2 &= \\
= 27 - \left\{ 17 \right\}^2 : 17^2 &= \\
= 27 - 17^2 : 17^2 &= \\
= 27 - 17^0 = 27 - 1 = 26. &= \quad (83)
\end{aligned}$$

$$\begin{aligned}
(45 : 3) \cdot [(12^2 : 3^2) : 2^2] - [((2)^2)^2 + (22 - 2) - (20^4 : 5^4)^0 - 15^3 : 5^3] &= \\
= 15 \cdot [4^2 : 2^2] - 2^4 + 21 - (4^4)^0 - 3^3 &= \\
= 15 \cdot [2^2] - 2^4 + 21 - 4^0 - 3^3 &= \\
= 15 \cdot 4 - 16 + 21 - 1 - 27 &= \\
= 60 - 16 + 20 - 27 &= \\
= 44 + 20 - 27 = 64 - 27 = 37. &
\end{aligned}$$

(84)

$$\begin{aligned}
[(2^2)^3 : (2^2)^2] + \{(3^4 \cdot 3^2)^3 : [(3^2)^3]^2\} : (9 \cdot 3^3) - (2 \cdot 3) &= \\
= [2^6 : 2^4] + \{(3^6)^3 : [3^6]^2\} : (3^2 \cdot 3^3) - 6 &= \\
= 2^2 + \{3^{18} : 3^{12}\} : 3^5 - 6 &= \\
= 4 + 3^6 : 3^5 - 6 &= \\
= 4 + 3^1 - 6 &= \\
= 4 + 3 - 6 = 7 - 6 = 1. &
\end{aligned}$$

(85)

$$\begin{aligned}
\{[(2 \cdot 4) + 2^2] : 2^2 - 1^0\}^2 - 1\}^3 - \{(8^2 : 4^2 - 5^0) \cdot [(3^3)^4 : ((3^4)^3)^5]\}^2 &= \\
= \{[(8 + 4) : 4 - 1]^2 - 1\}^3 - \{(2^2 - 1) \cdot [3^{12} : 3^{12}]^5\}^2 &= \\
= \{[12 : 4 - 1]^2 - 1\}^3 - \{(4 - 1) \cdot [3^0]^5\}^2 &= \\
= \{[3 - 1]^2 - 1\}^3 - \{3 \cdot [1]^5\}^2 &= \\
= \{2^2 - 1\}^3 - \{3 \cdot 1\}^2 &= \\
= \{4 - 1\}^3 - \{3\}^2 &= \\
= 3^3 - 3^2 = 27 - 9 = 18. &
\end{aligned}$$

(86)

$$\begin{aligned}
\{[(3 \cdot 3 + 11) : 2^2]^2 : 5 - 11^0\} \cdot 2^3 - [7^2 : (2 \cdot 3 + 1) + 2^3 + 10^0] &= \\
= \{[(9 + 11) : 4]^2 : 5 - 1\} \cdot 8 - [7^2 : (6 + 1) + 8 + 1] &= \\
= \{[20 : 4]^2 : 5 - 1\} \cdot 8 - [7^2 : 7 + 9] &= \\
= \{5^2 : 5 - 1\} \cdot 8 - [7^1 + 9] &= \\
= \{5^1 - 1\} \cdot 8 - [7 + 9] &= \\
= \{5 - 1\} \cdot 8 - 16 &= \\
= 4 \cdot 8 - 16 &= \\
= 32 - 16 = 16. &
\end{aligned}$$

(87)

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