Codice: RIS-DOC-MAT-2-2.PDF | Licenza: CC BY-NC-SA | Pubblicazione: 18 febbraio 2019

Divulgazione Libera

Le espressioni con i numeri interi

Emanuele Maria Latorre[1]

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.

[1] *Divulgazione Libera, www.divulgazionelibera.it, elatorre@divulgazionelibera.it*

Indice

1. Introduzione

Gli esercizi proposti nel codesto documento riguardano il seguente argomento:

- *le espressioni con i numeri interi* ($\mathbb{Z}$).

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.*

2. Le espressioni con i numeri interi ($\mathbb{Z}$)

$$\begin{aligned} 10+2+3-4\cdot 2^2-4^2:4-45:9-6= \\ 15-4\cdot 4-4-5-6= \\ 15-16-9-6= \\ -1-15= \\ =-16. \end{aligned} \tag{1}$$

$$\begin{aligned} (2\cdot 5)-\left(15:5-3^2:3\right)+4\cdot\left(2^2-3^2\right)+(15-1)= \\ 10-(3-3)+4\cdot(4-9)+14= \\ 10-0+4\cdot(-5)+14= \\ 10-20+14= \\ -10+14= \\ =+4. \end{aligned} \tag{2}$$

$$
\begin{aligned}
&\left(10\cdot 2-(4+2)\right):\left(3^2-2\right)+7\cdot\left(2^3-5\right)-6:3+\left(2^2\right)^3-(5\cdot 10)= \\
&(20-6):(9-2)+7\cdot(8-5)-6:3+(4)^3-50= \\
&14:7+7\cdot 3-2+64-50= \\
&2+21-2+64-50= \\
&23+62-50= \\
&85-50= \\
&=+35.
\end{aligned}
\tag{3}
$$

$$
\begin{aligned}
&\left((7+3)+6\cdot 2^2\right):(2^3:2^2)-60:2+(7-6\cdot 4)-\left(4+3-7^2\right)= \\
&(10+6\cdot 4):(2^1)-30+(7-24)-(4+3-49)= \\
&(10+24):2-30-17-(7-49)= \\
&34:2-30-17+42= \\
&17-30-17+42= \\
&-13-17+42= \\
&-30+42= \\
&=+12.
\end{aligned}
\tag{4}
$$

$$
\begin{aligned}
&\left[17-(15\cdot 2-13)\right]^3+\left[\left(7\right)^2:7\right]^0-\left[15+6\cdot(12-24:2)\right]+7= \\
&\left[17-(30-13)\right]^3+\left[+49:7\right]^0-\left[15+6\cdot(12-12)\right]+7= \\
&\left[17-17\right]^3+7^0-\left[15+6\cdot 0\right]+7= \\
&0^3+1-\left[15+0\right]+7= \\
&0+1-15+7= \\
&+1-15+7= \\
&-14+7= \\
&=-7.
\end{aligned}
\tag{5}
$$

$$
\begin{aligned}
&(26-11)-(-2)^3\cdot(2^2)+17\cdot 2-6\cdot 10-\left[(4)^2\right]^3:(2)^4+(400:2)= \\
&15-(-2)^3\cdot(2)^2+34-60-\left[4\right]^6:16+200= \\
&15-(-2)^5+34-60-\left[4\right]^6:\left[4\right]^2+200= \\
&15-(-32)+34-60-4^4+200= \\
&15+32+34-60-256+200= \\
&47+34-60-256+200= \\
&81-60-256+200= \\
&21-256+200= \\
&-235+200= \\
&=-35.
\end{aligned}
\tag{6}
$$

$$
\begin{aligned}
\left\{\left[2-7\cdot(6-8)\right]:(-2)-\left(-2^3+4\right)\right\}:(-2)+\left[-(-2+7)\cdot(-4)\right] &= \\
\left\{\left[2-7\cdot-2\right]:(-2)-(-8+4)\right\}:(-2)+\left[-(+5)\cdot(-4)\right] &= \\
\left\{\left[2+14\right]:(-2)-(-4)\right\}:(-2)+\left[-5\cdot(-4)\right] &= \\
\left\{16:(-2)-(-4)\right\}:(-2)+20 &= \\
\left\{-8-(-4)\right\}:(-2)+20 &= \\
\left\{-8+4\right\}:(-2)+20 &= \\
-4:(-2)+20 &= \\
+2+20 &= \\
&= +22.
\end{aligned}
\tag{7}
$$

$$
\begin{aligned}
\left[(7-23):(-2)^3+(18-20)\cdot(-7+4)\right]\cdot(8-11)+\left(-2\cdot3+4\cdot3^2\right) &= \\
\left[-16:-8+(-2)\cdot(-3)\right]\cdot(-3)+(-6+36) &= \\
\left[+2+(+6)\right]\cdot(-3)+(+30) &= \\
\left[+2+6\right]\cdot(-3)+30 &= \\
+8\cdot(-3)+30 &= \\
-24+30 &= \\
&= +6.
\end{aligned}
\tag{8}
$$

$$
\begin{aligned}
(-5+3)^3\cdot2^2-\left\{\left[(5-7)\cdot(4-1)+3\right]:3-(-5)+2\cdot(-4)\right\}+\left(2^0-1\right) &= \\
(-2)^3\cdot4-\left\{\left[-2\cdot3+3\right]:3+5-8\right\}+0 &= \\
-8\cdot4-\left\{\left[-6+3\right]:3-3\right\} &= \\
-32-\left\{-3:3-3\right\} &= \\
-32-\left\{-1-3\right\} &= \\
-32-\left\{-4\right\} &= \\
-32+4 &= \\
&= -28.
\end{aligned}
\tag{9}
$$

$$
\begin{aligned}
\left\{-(+7)-\left[-3\cdot(-3)\right]\right\}+\left\{\left[6\cdot(4^0)\right]-\left[-(-2)\right]\right\}-\left\{-\left[-(-5)\right]-\left[(-1)\cdot(-3)\right]\right\} &= \\
\left\{-7-\left[+9\right]\right\}+\left\{\left[+6\right]-\left[+2\right]\right\}-\left\{-\left[+5\right]-\left[+3\right]\right\} &= \\
\left\{-7-9\right\}+\left\{+6-2\right\}-\left\{-5-3\right\} &= \\
\left\{-16\right\}+\left\{+4\right\}-\left\{-8\right\} &= \\
-16+4+8 &= \\
-12+8 &= \\
&= -4.
\end{aligned}
\tag{10}
$$

$$
\begin{aligned}
(45:3-40:2)-\{20:2-[3\cdot(-2)-(-15):3]+[(12):(3)-(-6)\cdot(-2)]\}:[(-5)\cdot 4+17^{1}] &= \\
(15-20)-\{10-[-6-(-5)]+[+4-(+12)]\}:[-20+17] &= \\
-5-\{10-[-6+5]+[+4-12]\}:-3 &= \\
-5-\{10-[-1]+[-8]\}:-3 &= \\
-5-\{10+1-8\}:-3 &= \\
-5-\{11-8\}:-3 &= \\
-5-\{3\}:-3 &= \\
-5-3:-3 &= \\
-5+1 &= \\
&= -4.
\end{aligned}
\tag{11}
$$

$$
\begin{aligned}
\left\{\left[(4)^{3}\cdot(4)^{4}\cdot(-4)^{2}\right]:\left[(-4)^{3}\cdot(-4)^{1}\right]\right\}:\left[-(4)^{3}\cdot(-6)^{0}\right] &= \\
\left\{\left[(+4^{7})\cdot(-4)^{2}\right]:\left[(+4^{4})\right]\right\}:\left[-(4^{3})\cdot 1\right] &= \\
\{[(-4^{9})]:(+4^{4})\}:-(4^{3}) &= \\
\{(-4^{9}):(+4^{4})\}:-(4^{3}) &= \\
\{-4^{5}\}:-(4^{3}) &= \\
-1024:-64 &= \\
&= +16.
\end{aligned}
\tag{12}
$$

$$
\begin{aligned}
\left\{\left[(3)^{4}\cdot(7)^{4}\right]^{2}:\left[(21)^{1}\cdot(21)^{4}\right]\right\}:\left\{\left[(-7)^{2}\right]^{2}:7\right\} &= \\
\left\{\left[(21)^{4}\right]^{2}:(21)^{5}\right\}:\left\{(7)^{4}:7\right\} &= \\
\left\{(21)^{8}:(21)^{5}\right\}:\left\{7^{4}:7\right\} &= \\
\{21^{3}\}:\{7^{3}\} &= \\
3^{3}\cdot 7^{3}:7^{3} &= \\
3^{3}\cdot 1 &= \\
&= +27.
\end{aligned}
\tag{13}
$$

$$
\begin{aligned}
[(3+60):(47-80:2)]:[(64:2)+29]\cdot\{-5\cdot(4)-[-5+(-4\cdot 7+4):2]+1\} &= \\
[63:(47-40)]:[-32+29]\cdot\{-20-[-5+(-28+4):2]+1\} &= \\
[63:7]:-3\cdot\{-20-[-5-24:2]+1\} &= \\
9:-3\cdot\{-20-[-5-12]+1\} &= \\
-3\cdot\{-20-[-17]+1\} &= \\
-3\cdot\{-20+17+1\} &= \\
-3\cdot\{-3+1\} &= \\
-3\cdot-2 &= \\
&= +6.
\end{aligned}
\tag{14}
$$

$$
\begin{aligned}
\left\{4^2 : \left[18 - 5 \cdot (10 - 9 + 1)\right]\right\}^3 : \left(2\right)^2 + 6 \cdot \left[4 - (3 \cdot 2 + 1)\right] - (5 \cdot 3) &= \\
\left\{16 : \left[18 - 5 \cdot (1 + 1)\right]\right\}^3 : +4 + 6 \cdot \left[4 - (6 + 1)\right] - 15 &= \\
\left\{16 : \left[18 - 5 \cdot (2)\right]\right\}^3 : +4 + 6 \cdot \left[4 - (7)\right] - 15 &= \\
\left\{16 : \left[18 - 10\right]\right\}^3 : +4 + 6 \cdot \left[4 - 7\right] - 15 &= \\
\left\{16 : 8\right\}^3 : +4 + 6 \cdot -3 - 15 &= \\
\left\{2\right\}^3 : +4 - 18 - 15 &= \\
8 : +4 - 18 - 15 &= \\
2 - 18 - 15 &= \\
-16 - 15 &= \\
&= -31.
\end{aligned}
\tag{15}
$$

$$
\begin{aligned}
\left\{(-2)^4 - \left[(-2)^2 + 3^5 : (3)^3 \cdot (2^3 : 2^2)^2\right] : \left[(-2^2)^1 \cdot (13^0)\right]\right\} \cdot 2 - (-4)^2 &= \\
\left\{16 - \left[4 + 3^4 : 9 \cdot (2^1)^2\right] : \left[(-4)^1 \cdot 1\right]\right\} \cdot 2 - (+16) &= \\
\left\{16 - \left[4 + 3^4 : 3^2 \cdot (2^2)\right] : \left[(-4) \cdot 1\right]\right\} \cdot 2 - 16 &= \\
\left\{16 - \left[4 + 3^2 \cdot 4\right] : \left[(-4) \cdot 1\right]\right\} \cdot 2 - 16 &= \\
\left\{16 - \left[4 + 9 \cdot 4\right] : \left[-4\right]\right\} \cdot 2 - 16 &= \\
\left\{16 - \left[4 + 36\right] : -4\right\} \cdot 2 - 16 &= \\
\left\{16 - \left[40\right] : -4\right\} \cdot 2 - 16 &= \\
\left\{16 - 40 : -4\right\} \cdot 2 - 16 &= \\
\left\{16 + 10\right\} \cdot 2 - 16 &= \\
\left\{26\right\} \cdot 2 - 16 &= \\
52 - 16 &= \\
&= 36.
\end{aligned}
\tag{16}
$$

$$
\begin{aligned}
\left[(2\cdot 9-10\cdot 2)\cdot(-2)^2\right]^3 : \left[(-2)^2\right]^3 - \left[-7\cdot(6-8)\right]^2 : \left[(2)^5-(-5)^2\right]^2 &= \\
\left[(18-20)\cdot 4\right]^3 : (-2)^6 - \left[-7\cdot -2\right]^2 : \left[(2)^5-(+25)\right]^2 &= \\
\left[-2\cdot 4\right]^3 : +64 - \left[14\right]^2 : \left[32-25\right]^2 &= \\
[-8]^3 : +8^2 - \left[14\right]^2 : [7]^2 &= \\
-8^1 - 196 : 49 &= \\
-8-4 &= \\
&= -12.
\end{aligned}
\tag{17}
$$

$$
\begin{aligned}
\left\{\left[(6\cdot 4-7\cdot 3)^4 : (3)^2\right]^3 : (3)^6\right\}\cdot\left[15-(18+4)\right]^2 - 40 - 3 + 7 &= \\
\left\{\left[(24-21)^4 : 9\right]^3 : (3)^6\right\}\cdot\left[15-(22)\right]^2 - 43 + 7 &= \\
\left\{\left[(3)^4 : 9\right]^3 : (3)^6\right\}\cdot\left[15-22\right]^2 - 43 + 7 &= \\
\left\{\left[\left((3)^2\right)^2 : 9\right]^3 : (3)^6\right\}\cdot\left[15-22\right]^2 - 43 + 7 &= \\
\left\{\left[9^2 : 9\right]^3 : \left((3)^2\right)^3\right\}\cdot\left[-7\right]^2 - 43 + 7 &= \\
\left\{\left[9^1\right]^3 : 9^3\right\}\cdot\left[-7\right]^2 - 43 + 7 &= \\
\left\{9^3 : 9^3\right\}\cdot 49 - 43 + 7 &= \\
\{1\}\cdot 49 - 43 + 7 &= \\
49 - 43 + 7 &= \\
6 + 7 &= \\
&= 13.
\end{aligned}
\tag{18}
$$

$$
\begin{aligned}
\left[(-3)^9 : (+3)^6\cdot(+3)^2\right]\cdot(-2)^5 : \left[-(+7)^2\cdot(-7)^3 : \left(-7^2\right)^2 - 1\right]^{5-1} - 6^4 : \left[(+2)^3\cdot(-3)^3\right] &= \\
\left[(-3)^3\cdot(+3)^2\right]\cdot(-2)^5 : \left[-(-7)^5 : \left(+7^2\right)^2 - 1\right]^4 - 6^4 : \left[(-6)^3\right] &= \\
\left[(-3)^5\right]\cdot(-2)^5 : \left[+7^5 : +7^4 - 1\right]^4 - 6^4 : (-6)^3 &= \\
(-3)^5\cdot(-2)^5 : \left[+7^1 - 1\right]^4 + 6^1 &= \\
(+6)^5 : \left[7-1\right]^4 + 6 &= \\
6^5 : \left[6\right]^4 + 6 &= \\
6^5 : 6^4 + 6 &= \\
6^1 + 6 &= \\
6 + 6 &= \\
&= 12.
\end{aligned}
\tag{19}
$$

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

$$
\begin{aligned}
&\left\{\left[-2^2\cdot(+2)^5\right]\cdot\left[(+3)^2\cdot(-3)^5\right]\right\}:(+6)^5-3^2+(-3)^2:(+3)-2^0= \\
&\left\{-2^7\cdot(-3)^7\right\}:6^5-3^2+3^2:3-1= \\
&6^7:6^5-3^2+3^1-1= \\
&6^2-9+3-1= \\
&36-9+3-1= \\
&27+2= \\
&=29.
\end{aligned}
\tag{21}
$$

$$
\begin{aligned}
&\left(+4^2\right)^3\cdot\left\{\left[(-2)^3\right]^2\cdot\left[(+2)^2\right]^4\right\}:\left\{\left[(-4)^3\right]^2\right\}^2+(-4)^2\cdot(+4)^3:(-4)^4+(9-1)-2^3= \\
&4^6\cdot\left\{\left(-2\right)^6\cdot\left(2\right)^8\right\}:(-4)^{12}+(-4)^5:(-4)^4+8-8= \\
&4^6\cdot\left\{2^6\cdot2^8\right\}:(-4)^{12}+(+4)^1+0= \\
&4^6\cdot2^{14}:(-4)^{12}+4= \\
&\left(2^2\right)^6\cdot2^{14}:+4^{12}+4= \\
&2^{12}\cdot2^{14}:+\left(2^2\right)^{12}+4= \\
&2^{12}\cdot2^{14}:2^{24}+4= \\
&2^{26}:2^{24}+4= \\
&2^2+4= \\
&4+4= \\
&=8.
\end{aligned}
\tag{22}
$$

$$
\begin{aligned}
\left\{(28)^6:(2)^6:\left[(+14)^1\right]^6\cdot(-14)\right\}^7:\left\{\left[(-21)^2\right]^3:(+3)^6\right\}:(-2)^4 &= \\
\left\{(+14)^6:\left[+14\right]^6\cdot(-14)\right\}^7:\left\{\left[-21\right]^6:(+3)^6\right\}:(+2)^4 &= \\
\left\{(+14)^0\cdot(-14)\right\}^7:\left\{\left[+21\right]^6:(+3)^6\right\}:(+2)^4 &= \\
\left\{(-14)^1\right\}^7:\left\{\left[7\right]^6\right\}:(+2)^4 &= \\
\left\{-14\right\}^7:\left\{\left[7\right]^6\right\}:(+2)^4 &= \\
-14^7:7^6:2^4 &= \\
= -56. &
\end{aligned}
\tag{23}
$$

$$
\begin{aligned}
4-\left(2^3+\left(2^0\cdot 4\right)\right):4+\left\{2^3\cdot\left[-5^2:(-5)\right]^3\right\}:\left[(-6)^3:(-2)^3-3^2-2^3\right]-5^0 &= \\
4-(8+4):4+\left\{8\cdot\left[-25:-5\right]^3\right\}:\left[3^3-9-8\right]-1 &= \\
4-12:4+\left\{8\cdot\left[5\right]^3\right\}:\left[27-9-8\right]-1 &= \\
4-3+\left\{8\cdot\left[5\right]^3\right\}:\left[27-9-8\right]-1 &= \\
4-3+\left\{8\cdot 125\right\}:\left[18-8\right]-1 &= \\
1+\left\{1000\right\}:\left[10\right]-1 &= \\
1+100-1 &= \\
= 100. &
\end{aligned}
\tag{24}
$$

$$
\begin{aligned}
\left\{(8-14)+(30-32)\cdot(4+3)+\left[2\cdot(-2)\right]\right\}:(-8+2)+\left[1\cdot 6+4\right]:(-5) &= \\
\left\{-6+(-2)\cdot 7+\left[-4\right]\right\}:-6+\left[+6+4\right]:(-5) &= \\
\left\{-6-2\cdot 7-4\right\}:-6+\left[+10\right]:(-5) &= \\
\left\{-6-14-4\right\}:-6-2 &= \\
-24:-6-2 &= \\
4-2 &= \\
= 2. &
\end{aligned}
\tag{25}
$$

$$
\begin{aligned}
\left\{\left[8\cdot 2^0+(24:2):(-3)+2\right]:\left[2\cdot(-6)-36:(-12)+7\right]\right\}\cdot(-1)-(8-3) &= \\
\left\{\left[+8+12:(-3)+2\right]:\left[-12+3+7\right]\right\}\cdot(-1)-5 &= \\
\left\{\left[+8-4+2\right]:\left[-9+7\right]\right\}\cdot(-1)-5 &= \\
\left\{\left[+4+2\right]:\left[-2\right]\right\}\cdot(-1)-5 &= \\
\left\{6:\left[-2\right]\right\}\cdot(-1)-5 &= \\
\left\{-3\right\}\cdot(-1)-5 &= \\
+3-5 &= \\
= -2. &
\end{aligned}
\tag{26}
$$

$$
\begin{aligned}
\{5\cdot[2\cdot 5-2\cdot(7\cdot 3-2\cdot 10)]\cdot 8\}:(190-110)+[(4+45:3):(3+2\cdot 8)] &= \\
\{5\cdot[10-2\cdot(21-20)]\cdot 8\}:80+[(4+15):(3+16)] &= \\
\{5\cdot[10-2\cdot(1)]\cdot 8\}:80+[19:19] &= \\
\{5\cdot[10-2]\cdot 8\}:80+1 &= \\
\{5\cdot[8]\cdot 8\}:80+1 &= \\
\{40\cdot 8\}:80+1 &= \\
320:80+1 &= \\
4+1 &= \\
&= 5.
\end{aligned}
\tag{27}
$$

$$
\begin{aligned}
-3\cdot(-4)+(40\cdot 2)+(-2)+(-8)\cdot(+5)+5\cdot[-7-1\cdot 2^2-3]-24:2\cdot(-4) &= \\
+12+80-2-40+5\cdot[-7-4-3]-12\cdot(-4) &= \\
92-2-40+5\cdot[-11-3]+48 &= \\
90-40+5\cdot[-14]+48 &= \\
50-70+48 &= \\
-20+48 &= \\
&= 28.
\end{aligned}
\tag{28}
$$

$$
\begin{aligned}
\{(6-11)-[-(-1)]\}-\{[-(+5)]-[-(-7)]\}-\{-[-(-3)]-[+6^0\cdot 6]\} &= \\
\{-5-[+1]\}-\{[-5]-[+7)]\}-\{-[+3]-[+6]\} &= \\
\{-5-1\}-\{-5-7\}-\{-3-6\} &= \\
\{-6\}-\{-12\}-\{-9\} &= \\
-6+12+9 &= \\
+6+9 &= \\
&= 15.
\end{aligned}
\tag{29}
$$

$$
\begin{aligned}
(-6)\cdot(-3)+30+(-8)+(-4)\cdot(+5)+7\cdot[-5-1\cdot 2^2\cdot 3]-6\cdot 4\cdot(-2) &= \\
+18+30-8-20+7\cdot[-5-4\cdot 3]-24\cdot(-2) &= \\
48-8-20+7\cdot[-5-12]+48 &= \\
40-20+7\cdot[-17]+48 &= \\
20-119+48 &= \\
-99+48 &= \\
&= -51.
\end{aligned}
\tag{30}
$$

$$
\begin{aligned}
[(-3)\cdot(-9)+7^2:(-7)]:[(-12):(+6)-2]+(48\cdot 2):\{9+[(-5)-11\cdot 2\cdot 2]:(-7)-4\} &= \\
[+27-7]:[-2-2]+96:\{9+[-5-22\cdot 2]:(-7)-4\} &= \\
20:-4+96:\{9+[-5-44]:(-7)-4\} &= \\
-5+96:\{9-49:(-7)-4\} &= \\
-5+96:\{9+7-4\} &= \\
-5+96:\{16-4\} &= \\
-5+96:\{12\} &= \\
-5+8 &= \\
&= +3.
\end{aligned}
\tag{31}
$$

$$
\begin{aligned}
\left\{\left[(2^1)^2+60:2\right]:2\right\}+4+3^2-(2^4-7^0) &= \\
\left\{\left[(4)^2+30\right]:2\right\}+4+9-(16-1) &= \\
\left\{\left[16+30\right]:2\right\}+4+9-(15) &= \\
\left\{46:2\right\}+4+9-15 &= \\
23+4+9-15 &= \\
27+9-15 &= \\
36-15 &= \\
&= 21.
\end{aligned}
\tag{32}
$$

$$
\begin{aligned}
(10:2)^3-6\cdot 2^4+\left[(4-2)^2:2^2+6\right]-5^0\cdot 3^3:3^2 &= \\
(5)^3-6\cdot 16+\left[(2)^2:4+6\right]-1\cdot 27:9 &= \\
125-96+[4:4+6]-27:9 &= \\
29+[1+6]-3 &= \\
29+7-3 &= \\
36-3 &= \\
&= 33.
\end{aligned}
\tag{33}
$$

$$
\begin{aligned}
(40-5)+2\cdot[20:2+2\cdot 2^2]:2-(17+8)-\left(3\cdot 2^3:4+3^2\cdot(2^0\cdot 2)\right) &= \\
35+2\cdot[10+2\cdot 4]:2-25-(3\cdot 8:4+9\cdot 2) &= \\
35+2\cdot[10+8]:2-25-(24:4+18) &= \\
35+2\cdot[18]:2-25-(6+18) &= \\
35+36:2-25-(24) &= \\
35+18-25-24 &= \\
53-25-24 &= \\
53-49 &= \\
&= 4.
\end{aligned}
\tag{34}
$$

$$
\begin{aligned}
\left[\left(6^3\cdot 2^3:3^3\right):\left(20^4:10^4-8\right)\cdot 2^3\right]:\left(2^1\right)^6 &= \\
\left[\left(12^3:3^3\right):\left(2^4-8\right)\cdot 2^3\right]:2^6 &= \\
\left[4^3:\left(16-8\right)\cdot 8\right]:2^6 &= \\
\left[4^3:8\cdot 8\right]:2^6 &= \\
\left[4^3:2^3\cdot 2^3\right]:2^6 &= \\
\left[2^3\cdot 2^3\right]:2^6 &= \\
2^6:2^6 &= \\
2^0 &= \\
&= 1.
\end{aligned}
\tag{35}
$$

$$
\begin{aligned}
\left[\left(4^{10}:4^{6}\right)^{3-1}\cdot\left(4^{10}:4^{5}\right)\right]:4^{11}+1^{9}-\left(2^{2}\cdot 3+3^{0}\right) &= \\
\left[\left(4^{4}\right)^{2}\cdot\left(4^{5}\right)\right]:4^{11}+1-(4\cdot 3+1) &= \\
\left[4^{8}\cdot 4^{5}\right]:4^{11}+1-(12+1) &= \\
\left[4^{13}\right]:4^{11}+1-(13) &= \\
4^{2}+1-13 &= \\
16+1-13 &= \\
17-13 &= \\
&= 4.
\end{aligned}
\tag{36}
$$

$$
\begin{aligned}
\left(6^{6}:6^{4}\cdot 36\right)^{2}:\left(4\cdot 3^{2}\right)^{3}-\left[\left(2^{12}\right)^{1}:4^{4}+8^{0}\cdot 2^{2}\right]+3^{3}:3 &= \\
\left(6^{2}\cdot 6^{2}\right)^{2}:\left(2^{2}\cdot 3^{2}\right)^{3}-\left[2^{12}:4^{4}+1\cdot 2^{2}\right]+3^{2} &= \\
\left(6^{4}\right)^{2}:\left(6^{2}\right)^{3}-\left[2^{12}:(2^{2})^{4}+4\right]+9 &= \\
6^{8}:6^{6}-\left[2^{12}:2^{8}+4\right]+9 &= \\
6^{2}-\left[2^{4}+4\right]+9 &= \\
36-[16+4]+9 &= \\
36-20+9 &= \\
16+9 &= \\
&= 25.
\end{aligned}
\tag{37}
$$

$$
\begin{aligned}
\left[\left(10^{4}\cdot 1^{4}\right)^{3}:\left(10^{2}\right)^{5}-5^{2}\cdot 2\right]:\left[\left(5^{2}\right)^{2}:5^{2}\right]+2^{2}+(4\cdot 2) &= \\
\left[\left(10^{4}\right)^{3}:\left(10^{10}\right)-25\cdot 2\right]:\left[\left(5^{4}\right):5^{2}\right]+4+8 &= \\
\left[10^{12}:10^{10}-25\cdot 2\right]:\left[5^{4}:5^{2}\right]+4+8 &= \\
\left[10^{2}-50\right]:\left[5^{2}\right]+4+8 &= \\
\left[100-50\right]:25+4+8 &= \\
50:25+12 &= \\
2+12 &= \\
&= 14.
\end{aligned}
\tag{38}
$$

$$
\begin{aligned}
\left\{\left[(6)^{3}\cdot(3)^{3}\right]:(2\cdot 9)^{2}\right\}:(-18)\cdot(-2) &= \\
\left\{\left[+18^{3}\right]:18^{2}\right\}:(-18)\cdot(-2) &= \\
\left\{18\right\}:(-18)\cdot(-2) &= \\
-1\cdot(-2) &= \\
&= +2.
\end{aligned}
\tag{39}
$$

$$
\begin{aligned}
\left(3^2\cdot 2^2\right):36+(-2)^5:(2)^2+11^1 &= \\
6^2:6^2+(-2)^3+11 &= \\
6^0-2^3+11 &= \\
1-8+11 &= \\
-7+11 &= \\
&= 4.
\end{aligned}
\tag{40}
$$

$$
\begin{aligned}
\left\{4^2:\left[3^2\cdot 2^2-3\cdot\left(3^4:3^2\right)-2^4:2^3+2^2-3\right]+3\right\}^2 &= \\
\left\{16:\left[6^2-3\cdot 3^2-2^1+4-3\right]+3\right\}^2 &= \\
\left\{16:\left[36-3^3-2+1\right]+3\right\}^2 &= \\
\{16:[36-27-1]+3\}^2 &= \\
\{16:[9-1]+3\}^2 &= \\
\{16:8+3\}^2 &= \\
\{2+3\}^2=\{5\}^2 &= \\
&= 25.
\end{aligned}
\tag{41}
$$

$$
\begin{aligned}
[4\cdot 3-(7\cdot 3-5\cdot 2)]^3+\left[(-3)^2\cdot(-4)^2:48\right]^4:(3)^3-2 &= \\
[12-(21-10)]^3+[9\cdot 16:48]^4:(3)^3-2 &= \\
[12-(11)]^3+[144:48]^4:(3)^3-2 &= \\
[1]^3+[3]^4:(3)^3-2 &= \\
1+3^1-2 &= \\
1+3-2 &= \\
4-2 &= \\
&= 2.
\end{aligned}
\tag{42}
$$

$$
\begin{aligned}
\left\{\left[(24-7\cdot 3)^6:(-3)^2\right]^3:(3)^6\right\}:\left[(13\cdot 1)-(2+20)\right]^2-43+7 &= \\
\left\{\left[(24-21)^6:3^2\right]^3:(3)^6\right\}:\left[13-(22)\right]^2-36 &= \\
\left\{\left[3^6:3^2\right]^3:(3)^6\right\}:\left[-9\right]^2-36 &= \\
\left\{\left[3^4\right]^3:(3)^6\right\}:9^2-36 &= \\
\left\{3^{12}:3^6\right\}:(3^2)^2-36 &= \\
\{3^6\}:3^4-36 &= \\
3^2-36 &= \\
9-36 &= \\
&= -27.
\end{aligned}
\tag{43}
$$

$$
\begin{aligned}
\left[\left(-3^2\right)^3\cdot\left(-3\right)^4\right]:\left[\left(3^2\right)^3\cdot 9\right] &= \\
\left[-\left(3^2\right)^3\cdot\left(+3\right)^4\right]:\left[\left(3^6\right)\cdot(3)^2\right] &= \\
\left[-3^6\cdot 3^4\right]:\left[3^8\right] &= \\
-3^{10}:3^8 &= \\
-3^2 &= \\
&= -9.
\end{aligned}
\tag{44}
$$

$$
\begin{aligned}
\left[7^4:7^2-(2\cdot 7)^2:7\right]:\left[\left(7^2\right)^3:7^5\right]+\left(1^6\cdot 6^6\right):6^5+6^2 &= \\
\left[7^2-(14)^2:7\right]:\left[7^6:7^5\right]+6^6:6^5+6^2 &= \\
\left[7^2-196:7\right]:7^1+6^1+6^2 &= \\
[49-28]:7+6+36 &= \\
21:7+42 &= \\
3+42 &= \\
&= 45.
\end{aligned}
\tag{45}
$$

$$
\begin{aligned}
0^4-10^5:\left[\left(-5^2:5\right)^2\cdot(-5)^3\right]:\left(-4\cdot 1\right)^2+\left[3^3\cdot(-2)^3:36\right]^2 &= \\
0-10^5:\left[\left(-5\right)^2\cdot(-5)^3\right]:\left(-4\right)^2+\left[-6^3:6^2\right]^2 &= \\
-10^5:\left[-5^5\right]:16+\left[-6^1\right]^2 &= \\
+2^5:16+\left[-6\right]^2 &= \\
2:16+36 &= \\
2+36 &= \\
&= 38.
\end{aligned}
\tag{46}
$$

$$
\begin{aligned}
\left\{\left[3^2\cdot(30-27)^3\right]:(4-1)^3\right\}:(-3)\cdot\left\{\left[(-6)^2\right]^2:4^2\right\}:3^4+\left(-2\right)^3 &= \\
\left\{\left[3^2\cdot 3^3\right]:3^3\right\}:(-3)\cdot\left\{\left[6^2\right]^2:2^4\right\}:3^4-8 &= \\
\left\{3^5:3^3\right\}:(-3)\cdot\left\{6^4:2^4\right\}:3^4-8 &= \\
3^2:(-3)\cdot\left\{3^4\right\}:3^4-8 &= \\
-3^1\cdot 3^0-8 &= \\
-3\cdot 1-8 &= \\
-3-8 &= \\
&= -11.
\end{aligned}
\tag{47}
$$

$$
\begin{aligned}
&\left\{\left[(18-40:2)\cdot(-2)^2\right]^4:\left[(-2)^2\right]^3\right\}+\left[6-4\cdot 7\right]^3:\left[(2)^5-(-5)^2\right]^2= \\
&\left\{\left[(18-20)\cdot 4\right]^4:\left[2^2\right]^3\right\}+\left[2\cdot 7\right]^3:\left[(2)^5-25)^2\right]^2= \\
&\left\{\left[-2\cdot 4\right]^4:2^6\right\}+14^3:\left[32-25\right]^2= \\
&\left\{\left[-8\right]^4:2^6\right\}+14^3:7^2= \\
&\left\{8^4:2^6\right\}+(2\cdot 7)^3:7^2= \\
&\left\{(2^3)^4:2^6\right\}+2^3\cdot 7^3:7^2= \\
&2^{12}:2^6+2^3\cdot 7^1= \\
&2^6+2^3\cdot 7= \\
&64+8\cdot 7= \\
&64+56= \\
&=120.
\end{aligned}
\tag{48}
$$

$$
\begin{aligned}
&\left\{\left[(-3)^2\cdot(-3)^4\cdot(-3)^3\right]:\left[(-3)^4:5^0\right]\right\}:(-3)^3= \\
&\left\{\left[3^6\cdot(-3)^3\right]:\left[3^4:1\right]\right\}:-3^3= \\
&\left\{-3^9:3^4\right\}:-3^3= \\
&-3^5:-3^3= \\
&3^2= \\
&=9.
\end{aligned}
\tag{49}
$$

$$
\begin{aligned}
&\left\{2\cdot 6-\left[+2+2^3:(-2)^2\cdot\left(2^7:2^6\right)^2\right]:\left[\left(-2^2\right)^2:2^3\right]\right\}\cdot 3-3^3= \\
&\left\{12-\left[2+2^3:2^2\cdot\left(2^1\right)^2\right]:\left[(-4)^2:2^3\right]\right\}\cdot 3-3^3= \\
&\left\{12-\left[2+2^1\cdot 2^2\right]:\left[16:2^3\right]\right\}\cdot 3-3^3= \\
&\left\{12-\left[2+2^3\right]:\left[2^4:2^3\right]\right\}\cdot 3-3^3= \\
&\left\{12-\left[2+8\right]:\left[2^1\right]\right\}\cdot 3-3^3= \\
&\left\{12-\left[10\right]:2\right\}\cdot 3-3^3= \\
&\left\{12-10:2\right\}\cdot 3-3^3= \\
&\left\{12-5\right\}\cdot 3-3^3= \\
&\left\{7\right\}\cdot 3-27= \\
&21-27= \\
&=-6.
\end{aligned}
\tag{50}
$$

$$
\begin{aligned}
&(2^5)^2\cdot(-2)^3:\left\{\left[-(-2)^2\right]^3\cdot\left[-(-2)^2\right]^2\right\}\cdot(-2^2):(-2)^4-(6^0\cdot 0)=\\
&2^{10}\cdot(-2)^3:\left\{\left[-4\right]^3\cdot\left[-4\right]^2\right\}\cdot(-2^2):2^4-0=\\
&-2^{13}:\left\{-4^5\right\}\cdot(-2^2):2^4=\\
&-2^{13}:\left\{-2^2\right\}^5\cdot(-2^2):2^4=\\
&-2^{13}:-2^{10}\cdot(-2^2):2^4=\\
&2^3\cdot(-2^2):2^4=\\
&-2^5:2^4=\\
&-2^1=\\
&=-2.
\end{aligned}
\tag{51}
$$

$$
\begin{aligned}
&\left\{\left[-(-3)^1\right]^{15}\cdot\left[(-3)^2\right]^5\right\}:\left\{-(-3)^3\cdot(-3)^7\cdot\left[(-3)^2\right]^7\right\}+(2^0\cdot 1)=\\
&\left\{-(-3)^{15}\cdot(-3)^{10}\right\}:\left\{-(+3)^{10}\cdot(-3)^{14}\right\}+1=\\
&\left\{3^{15}\cdot(-3)^{10}\right\}:\left\{-3^{10}\cdot 3^{14}\right\}+1=\\
&\left\{3^{15}\cdot 3^{10}\right\}:\left\{-3^{24}\right\}+1=\\
&3^{25}:-3^{24}+1=\\
&-3^1+1=\\
&-3+1=\\
&=-2.
\end{aligned}
\tag{52}
$$

$$
\begin{aligned}
&(2+45)+[(+3)+(-4)]+\{(+6)+[(-2\cdot 7)+(-13)+3^2]-(17\cdot 1)\}=\\
&47+[3-4]+\{6+[-14-13+9]-17\}=\\
&47+[-1]+\{6+[-27+9]-17\}=\\
&47-1+\{6+[-18]-17\}=\\
&46+\{6-18-17\}=\\
&46+\{-12-17\}=\\
&46+\{-29\}=\\
&46-29=\\
&=17.
\end{aligned}
\tag{53}
$$

$$
\begin{aligned}
&+3\cdot 5-\{+7+[-6-(+18-9)]+7^0\}+\{-[+6-4+(3-2)]+6\}=\\
&+15-\{+7+[-6-(9)]+1\}+\{-[2+(1)]+6\}=\\
&+15-\{+7+[-6-9]+1\}+\{-[3]+6\}=\\
&+15-\{+7+[-15]+1\}+\{-3+6\}=\\
&+15-\{+7-15+1\}+\{+3\}=\\
&+15-\{8-15\}+3=\\
&+15-\{-7\}+3=\\
&+15+7+3=\\
&22+3=\\
&=25.
\end{aligned}
\tag{54}
$$

$$
\begin{aligned}
[15-(9\cdot 2-10^1)+3]:[2\cdot(-4)-2]+7\cdot[2\cdot(-6)+5] &= \\
[15-(18-10)+3]:[-8-2]+7\cdot[-12+5] &= \\
[15-8+3]:[-10]+7\cdot[-7] &= \\
[7+3]:-10-49 &= \\
10:-10-49 &= \\
-1-49 &= \\
&= -50.
\end{aligned}
\tag{55}
$$

$$
\begin{aligned}
3^2-2+5+[3+10-20+(3-2-10)]+[32+10-(36+5^0+12)+7] &= \\
9+3+[13-20+(1-10)]+[42-(37+12)+7] &= \\
12+[-7+(-9)]+[42-(49)+7] &= \\
12+[-7-9]+[42-49+7] &= \\
12+[-16]+[-7+7] &= \\
12-16+0 &= \\
-4+0 &= \\
&= -4.
\end{aligned}
\tag{56}
$$

$$
\begin{aligned}
7\cdot 3-7\cdot\{2-[5\cdot(10-9)-2]+6\}+5\cdot\{7\cdot[6\cdot 2^1-4\cdot(2+1)]-4\} &= \\
21-7\cdot\{2-[5\cdot 1-2]+6\}+5\cdot\{7\cdot[6\cdot 2-4\cdot(3)]-4\} &= \\
21-7\cdot\{2-[5-2]+6\}+5\cdot\{7\cdot[12-12]-4\} &= \\
21-7\cdot\{2-3+6\}+5\cdot\{7\cdot 0-4\} &= \\
21-7\cdot\{-1+6\}+5\cdot\{0-4\} &= \\
21-7\cdot\{+5\}+5\cdot\{-4\} &= \\
21-35-20 &= \\
1-35 &= \\
&= -34.
\end{aligned}
\tag{57}
$$

$$
\begin{aligned}
\left[\left(15^1\right)^4:(5)^4\right]^{7-1}:\left[-(-30)^{10}:\left(-10^2\right)^5\right]^2 &= \\
\left[15^4:5^4\right]^6:\left[-(30)^{10}:-10^{10}\right]^2 &= \\
\left[3^4\right]^6:\left[-30^{10}:-10^{10}\right]^2 &= \\
3^{24}:\left[3^{10}\right]^2 &= \\
3^{24}:3^{20} &= \\
3^4 &= \\
&= 81.
\end{aligned}
\tag{58}
$$

$$
\begin{aligned}
&\left[\left(6^{11}+6^{10}\right):\left(-6^{5}\right)^{2}\right]\cdot\left(-7^{8}\right)^{1}:(7)^{6}= \\
&\left[\left(6^{11}+6^{10}\right):\left(-6^{10}\right)\right]\cdot\left(-7\right)^{8}:7^{6}= \\
&\left[\left(6^{11}+6^{10}\right):6^{10}\right]\cdot 7^{8}:7^{6}= \\
&\left[6^{11}:6^{10}+6^{10}:6^{10}\right]\cdot 7^{8}:7^{6}= \\
&\left[6^{1}+6^{0}\right]\cdot 7^{8}:7^{6}= \\
&\left[6+1\right]\cdot 7^{8}:7^{6}= \\
&7\cdot 7^{8}:7^{6}= \\
&7^{9}:7^{6}= \\
&7^{3}= \\
&=343.
\end{aligned}
\tag{59}
$$

$$
\begin{aligned}
&-\left[(125)^{4}\cdot(5)^{8}\right]:\left[\left(5^{2}\right)^{2}\right]^{5}+(-5)^{9}:(625)^{2}= \\
&-\left[(5^{3})^{4}\cdot(5)^{8}\right]:\left[25^{2}\right]^{5}+(-5)^{9}:(5^{4})^{2}= \\
&-\left[5^{12}\cdot 5^{8}\right]:25^{10}-5^{9}:5^{8}= \\
&-5^{20}:\left(5^{2}\right)^{10}-5^{1}= \\
&-5^{20}:5^{20}-5= \\
&-5^{0}-5= \\
&-1-5= \\
&=-6.
\end{aligned}
\tag{60}
$$

$$
\begin{aligned}
&\left(17^{9}-17^{8}\right):17^{8}\cdot\left[\left(-2\right)^{4}\right]^{3}:\left[\left(-2^{9}\right)\cdot\left(-2\right)^{1}\right]= \\
&\left(17^{9}:17^{8}-17^{8}:17^{8}\right)\cdot 2^{12}:\left[-2^{10}\right]= \\
&\left(17^{1}-17^{0}\right)\cdot 2^{12}:\left[-2^{10}\right]= \\
&(17-1)\cdot 2^{12}:-2^{10}= \\
&16\cdot 2^{12}:-2^{10}= \\
&2^{4}\cdot 2^{12}:-2^{10}= \\
&2^{16}:-2^{10}= \\
&-2^{6}= \\
&=64.
\end{aligned}
\tag{61}
$$

$$
\begin{aligned}
&\left[\left(16^3+8^4\right):(-4)^4\right]:(-2)^3+(5-4)^0-1= \\
&\quad\left[\left(\left(2^4\right)^3+\left(2^3\right)^4\right):(4)^4\right]:-2^3+1^0-1= \\
&\qquad\left[\left(2^{12}+2^{12}\right):\left(2^2\right)^4\right]:-2^3+1-1= \\
&\qquad\qquad\left[\left(2\cdot 2^{12}\right):2^8\right]:-2^3+0= \\
&\qquad\qquad\qquad\left[2^{13}:2^8\right]:-2^3= \\
&\qquad\qquad\qquad\quad 2^5:-2^3= \\
&\qquad\qquad\qquad\qquad -2^2= \\
&\qquad\qquad\qquad\qquad\quad =-4.
\end{aligned}
\tag{62}
$$

$$
\begin{aligned}
&\left\{\left[60^4:(12)^4:(5)^3\right]^2\cdot\left[(-5)^3\right]^3\right\}:\left[(-15)^5:(3)^5\right]^2= \\
&\qquad\left\{\left[5^4:5^3\right]^2\cdot\left[-5\right]^9\right\}:\left[(-5)^5\right]^2= \\
&\qquad\qquad\left\{\left[5^1\right]^2\cdot -5^9\right\}:\left[(-5)^{10}\right]= \\
&\qquad\qquad\qquad\left\{5^2\cdot -5^9\right\}:5^{10}= \\
&\qquad\qquad\qquad\quad\left\{-5^{11}\right\}:5^{10}= \\
&\qquad\qquad\qquad\qquad -5^1= \\
&\qquad\qquad\qquad\qquad\quad =-5.
\end{aligned}
\tag{63}
$$

$$
\begin{aligned}
&-(6-4)+\left(2\cdot 4^0\right)+\left[\left(-2^6\cdot 4^2\right)^3:(-64)^5\right]^2:\left[\left(4^2\cdot 16^4\right)^2:(-2^8)^5\right]= \\
&-2+2\cdot 1\left[\left(-2^6\cdot\left(2^2\right)^2\right)^3:-\left((+8)^2\right)^5\right]^2:\left[\left(4^2\cdot\left(4^2\right)^4\right)^2:(-2)^{40}\right]= \\
&\qquad -2+2+\left[\left(-2^6\cdot 2^4\right)^3:-(+8)^{10}\right]^2:\left[\left(4^2\cdot 4^8\right)^2:2^{40}\right]= \\
&\qquad\qquad 0+\left[\left(-2^{10}\right)^3:-\left(+2^3\right)^{10}\right]^2:\left[\left(4^{10}\right)^2:2^{40}\right]= \\
&\qquad\qquad\qquad\left[2^{30}:-2^{30}\right]^2:\left[\left(\left(2^2\right)^{10}\right)^2:2^{40}\right]= \\
&\qquad\qquad\qquad\qquad\left[-2^0\right]^2:\left[\left(2^{20}\right)^2:2^{40}\right]= \\
&\qquad\qquad\qquad\qquad\qquad -2^0:\left[2^{40}:2^{40}\right]= \\
&\qquad\qquad\qquad\qquad\qquad\quad -1:2^0= \\
&\qquad\qquad\qquad\qquad\qquad\qquad -1:1= \\
&\qquad\qquad\qquad\qquad\qquad\qquad\quad =-1.
\end{aligned}
\tag{64}
$$

$$
\begin{aligned}
\left\{\left[(-5\cdot 9)^4\cdot 2^4 : (9\cdot 2)^4\right] : (-5^3)\right\}^4 : \left[(-25)^7 : (125)^4\right] &= \\
\left\{\left[(45)^4\cdot 2^4 : 18^4\right] : -5^3\right\}^4 : \left[-25^7 : ((5)^3)^4\right] &= \\
\left\{\left[90^4 : 18^4\right] : -5^3\right\}^4 : \left[-(5^2)^7 : 5^{12}\right] &= \\
\left\{5^4 : -5^3\right\}^4 : \left[-5^{14} : 5^{12}\right] &= \\
\left\{-5^1\right\}^4 : \left[-5^2\right] &= \\
5^4 : -5^2 &= \\
-5^2 &= \\
&= -25.
\end{aligned}
\tag{65}
$$

$$
\begin{aligned}
\left[16\cdot(-64)^3\right] : \left[(-2^4)^5\cdot 2^2\right]\cdot(-8)^2 - 2^3\cdot\left[(-16)^5 : (-2^3)^6\right] &= \\
\left[4^2\cdot -\left(4^3\right)^3\right] : \left[-2^{20}\cdot 2^2\right]\cdot 2^6 - 2^3\cdot\left[-(2^4)^5 : 2^{18}\right] &= \\
\left[4^2\cdot -\left(4^9\right)\right] : -2^{22}\cdot 2^6 - 2^3\cdot\left[-2^{20} : 2^{18}\right] &= \\
-4^{11} : -2^{22}\cdot 2^6 - 2^3\cdot(-2^2) &= \\
-2^{22} : -2^{22}\cdot 2^6 + 2^5 &= \\
+2^0\cdot 2^6 + 2^5 &= \\
1\cdot 2^6 + 2^5 &= \\
2^6 + 2^5 &= \\
64 + 32 &= \\
&= 96.
\end{aligned}
\tag{66}
$$

$$
\begin{aligned}
\left[(-125)^2 : (4+2^0)^5\right]^{10} : (-25)^4 + (-1\cdot 10+3)^4 : \left[125^3 : (-25)^4 + 3^0 + 1\right]^3 &= \\
\left[\left(-5^3\right)^2 : (4+1)^5\right]^{10} : (5^2)^4 + (-10+3)^4 : \left[(5^3)^3 : (5^2)^4 + 1 + 1\right]^3 &= \\
\left[\left(-5\right)^6 : (5)^5\right]^{10} : 5^8 + (-7)^4 : \left[5^9 : 5^8 + 2\right]^3 &= \\
\left[5^1\right]^{10} : 5^8 + 7^4 : \left[5^1 + 2\right]^3 &= \\
5^{10} : 5^8 + 7^4 : 7^3 &= \\
5^2 + 7^1 &= \\
25 + 7 &= \\
&= 32.
\end{aligned}
\tag{67}
$$

$$
\begin{aligned}
\left[(18)^{12}:3^{12}-6^4\cdot 6^7\right]:\left[(2)^{10}\cdot 3^{10}\right]+\left(9^6-27^3\right):(-27)^3+(-2)^{13}:(-4)^6 &= \\
\left[6^{12}-6^{11}\right]:\left[6^{10}\right]+\left((3^2)^6-(3^3)^3\right):\left(-(3^3)^3\right)-2^{13}:(2^2)^6 &= \\
\left[6^{12}:6^{10}\right]-\left[6^{11}:6^{10}\right]+\left(3^{12}-3^9\right):-3^9-2^{13}:2^{12} &= \\
6^2-6^1+\left(3^{12}:-3^9\right)+\left(-3^9:-3^9\right)-2^1 &= \\
36-6-3^3+3^0-2 &= \\
30-27+1-2 &= \\
3+1-2 &= \\
4-2 &= \\
&= 2.
\end{aligned}
\tag{68}
$$

$$
\begin{aligned}
\left[(4\cdot+4)^2\right]^4:\left\{\left[(-16)^6\cdot(+16)^1\right]^2:\left[(-16)^2\cdot\cdot(-16)^5\right]\right\}\cdot(-16)^5:\left[(+8)^2\right]^3 &= \\
(+16)^8:\left\{\left[16^6\cdot 16^1\right]^2:\left[16^2\cdot(-16)^5\right]\right\}\cdot(-(2^4))^5:\left[(2^3)^2\right]^3 &= \\
(+16)^8:\left\{\left[16^7\right]^2:\left[-16^7\right]\right\}\cdot(-(2^{20})):(2^3)^6 &= \\
16^8:\left\{16^{14}:\left[-16^7\right]\right\}\cdot(-(2^{20})):2^{18} &= \\
16^8:\left\{-16^7\right\}\cdot(-(2^{20})):2^{18} &= \\
-16^1\cdot(-(2^{20})):2^{18} &= \\
-(2^4)\cdot(-(2^{20})):2^{18} &= \\
2^{24}:2^{18} &= \\
2^6 &= \\
&= 64.
\end{aligned}
\tag{69}
$$

$$
\begin{aligned}
\left\{\left[(-3)^2\right]^3\cdot\left[(-27)^3\cdot 3^7\right]:\left[(3)^5\right]^4+\left[4^2\right]^3\cdot\left[(+4)^{16}:(-4)^3:(-4)^5\right]^3:\left[(-4)^7\right]^4\right\}-5^2 &= \\
\left\{3^6\cdot\left[(-3^3)^3\cdot 3^7\right]:3^{20}+4^6\cdot\left[-4^{13}:-4^5\right]^3:4^{28}\right\}-5^2 &= \\
\left\{3^6\cdot\left[(-3)^9\cdot 3^7\right]:3^{20}+4^6\cdot\left[4^8\right]^3:4^{28}\right\}-5^2 &= \\
\left\{3^6\cdot(-3^{16}):3^{20}+4^6\cdot 4^{24}:4^{28}\right\}-5^2 &= \\
\left\{-3^{22}:3^{20}+4^{30}:4^{28}\right\}-5^2 &= \\
\left\{-3^2+4^2\right\}-5^2 &= \\
\{-9+16\}-25 &= \\
7-25 &= \\
&= -18.
\end{aligned}
\tag{70}
$$

$$
\begin{aligned}
&\left\{\left[(-7)^3\cdot(+49)\cdot(-49)^2\right]:\left[(-7)^2\right]^4\cdot\left[(-7)^2\right]^6\right\}\cdot\left\{\left[27^2\cdot 9^7\right]^2:\left[(-3)^9\right]^3\right\}:\left(-5^2+2^2+4^0-1\right)^{13}=\\
&\left\{\left[(-7)^3\cdot 7^2\cdot(7^2)^2\right]:\left[7^8\right]\cdot\left[7^{12}\right]\right\}\cdot\left\{\left[(3^3)^2\cdot(3^2)^7\right]^2:\left[-3^{27}\right]\right\}:\left(-25+4+1-1\right)^{13}=\\
&\left\{\left[-7^5\cdot 7^4\right]:7^8\cdot 7^{12}\right\}\cdot\left\{\left[3^6\cdot 3^{14}\right]^2:-3^{27}\right\}:\left(-21+0\right)^{13}=\\
&\left\{-7^9:7^8\cdot 7^{12}\right\}\cdot\left\{\left[3^{20}\right]^2:-3^{27}\right\}:\left(-21\right)^{13}=\\
&\left\{-7^1\cdot 7^{12}\right\}\cdot\left\{3^{40}:-3^{27}\right\}:\left(-21\right)^{13}=\\
&\left\{-7^{13}\right\}\cdot\left\{3^{13}\right\}:\left(-21\right)^{13}=\\
&21^{13}:\left(-21\right)^{13}=\\
&-21^0=\\
&=-1.
\end{aligned}
\tag{71}
$$

$$
\begin{aligned}
&\left[(+4)^{11}\cdot(-3)^{11}\right]^2:\left[(+16)^5\cdot(-9)^5\right]^2-2^2\cdot(2\cdot 2+6^0)^2-(9^3:3^5)^3-(9+4\cdot 4)=\\
&\left[-12^{11}\right]^2:\left[-144^5\right]^2-2^2\cdot(4+1)^2-\left((3^2)^3:3^5\right)^3-(9+16)=\\
&12^{22}:\left[(12^2)^5\right]^2-2^2\cdot(5)^2-\left(3^6:3^5\right)^3-25=\\
&12^{22}:12^{20}-10^2-(3^1)^3-25=\\
&12^{22}:12^{20}-10^2-3^3-25=\\
&12^2-100-27-25=\\
&144-127-25=\\
&17-25=\\
&=-8.
\end{aligned}
\tag{72}
$$

$$
\begin{aligned}
&\left\{\left[(-3)^7\cdot(2\cdot 2+3^0)^{4+3}\right]:(45^2:3^2)\right\}^2:(81^2:9^3+6)^7:(-5)^3=\\
&\left\{\left[-3^7\cdot(4+1)^7\right]:(15^2)\right\}^2:\left((9^2)^2:9^3+6\right)^7:(-5)^3=\\
&\left\{\left[-3^7\cdot 5^7\right]:15^2\right\}^2:(9^4:9^3+6)^7:(-5)^3=\\
&\left\{-15^7:15^2\right\}^2:(9^1+6)^7:(-5)^3=\\
&\left\{-15^5\right\}^2:15^7:(-5)^3=\\
&15^{10}:15^7:(-5)^3=\\
&15^3:(-5)^3=\\
&-3^3=\\
&=-27.
\end{aligned}
\tag{73}
$$

Tabella 1. Revisioni documento.

Data	Versione	Autori	Modifica
27/04/2017	2-0	E. M. Latorre	Prima emissione.
27/04/2017	2-1	E. M. Latorre	Correzione puntamenti indice.
18/02/2019	2-2	E. M. Latorre	Prima emissione col nuovo formato.