Problema: $AN0007$ **- Algebra numerica**

Testo *[AN0007]* [1½ 3 1] Svolgi le seguenti espressioni numeriche indicando tutti i passaggi, ma senza fare passaggi inutili.

(a) $\xi = \left\{\left[\left(\frac{5}{6}-\frac{1}{4}\right):\left(-\frac{21}{12}\right)\right]^2+\frac{3}{4}:\left(-\frac{9}{5}\right)\right\}+\left(\frac{5}{2}-3\right)^3$

(b) $\xi = \left\{\left[\left(\frac{3}{4}\right)^2\cdot\left(\frac{3}{4}\right)^3\right]^2:\left(\frac{3}{4}\right)^8+\frac{5}{4}\right\}:\frac{9}{4}-\frac{2}{3}$

(c) $\xi = \left\{\left[\left(\frac{2}{3}\right)^3\cdot\left(\frac{2}{3}\right)^5\right]^2:\left(\frac{2}{3}\right)^{14}+\frac{5}{4}\right\}\cdot\left(\frac{1}{2}+\frac{1}{4}\right):\left(-\frac{7}{4}\right)$

(d) $\xi = \left[\left(\frac{5}{6}-\frac{1}{3}\right)^2:\left(\frac{1}{2}\right)^3+\left(-\frac{1}{2}\right)\right]+\left\{\left[\left(\frac{3}{4}\right)^5:\left(\frac{3}{4}\right)^3\right]\cdot\left(\frac{4}{3}\right)^2-1\right\}$

(e) $\xi = \left\{\left[\left(-\frac{4}{9}\right)^5:\left(-\frac{4}{9}\right)^3\right]\cdot\left(\frac{9}{4}\right)^2+\frac{1}{4}\right\}:\left(\frac{5}{8}-\frac{1}{2}\right)-\frac{27}{3}$

(f) $\left\{\left[\left(\frac{1}{4}+\frac{1}{6}\right):\left(\frac{5}{12}\right)\right]^3-2\right\}^{-1}\cdot\left[\left(\frac{2}{3}\right)^2-\frac{1}{9}\right]:\left(-\frac{1}{3}\right)$

(g) $\left[\left(-\frac{1}{2}\right)^3\cdot\left(4-\frac{1}{2}\right)\right]+\left\{\left[\left(\frac{3}{5}\right)^2:\left(\frac{5}{3}\right)^{-1}\right]\cdot\left(\frac{5}{3}\right)\right\}^2-(0.5)^2$

(h) $\left[\left(\frac{2}{3}\right)^5:\left(\frac{2}{3}\right)^3\right]^2+\left\{\left[\left(-\frac{1}{2}\right)^2\cdot\left(-\frac{1}{2}\right)^{-3}\right]^{-1}+\frac{3}{4}\right\}\cdot\left(\frac{1}{2}\right)$

(i) $\left\{\left[\left(2-\frac{3}{5}\right):\left(\frac{7}{10}\right)+\left(\frac{1}{3}\right)^0\right]-3\right\}^3:\left[\left(\frac{1}{2}\right)^{-2}-4\right]+\left(-\frac{1}{4}\right)^{-2}$

(j) $\left\{\left[\left(\frac{1}{2}-\frac{3}{4}\right)\cdot(-8)\right]-\left(1+\frac{1}{3}\right):\left(\frac{8}{3}\right)\right\}\cdot\left(-\frac{3}{5}\right)+\left(-\frac{1}{2}\right)^2:\left(\frac{1}{4}\right)^{-1}$

(k) $\left[\left(\frac{3}{4}\right)^{-1}:\left(1+\frac{1}{2}\right)^2\right]+\left\{\left[\left(\frac{1}{3}-1\right)\cdot\left(-\frac{9}{8}\right)\right]+\frac{1}{4}\right\}:\left(\frac{7}{4}\right)$

(l) $\left\{\left[\left(\frac{5}{4}-\frac{1}{2}\right)\cdot\left(-\frac{8}{3}\right)\right]^2+\frac{1}{3}\right\}\cdot\left[\left(-\frac{3}{5}\right)^{-2}:\left(3-\frac{1}{2}\right)\right]:\left(\frac{5}{2}\right)$

(m) $\left[(0.2)^3:\left(\frac{1}{5}\right)^2+\frac{2}{5}\right]\cdot\left\{\left[\left(\frac{5}{4}\right)^{-1}:\left(-\frac{2}{5}\right)\right]-2\right\}-\left(\frac{1}{2}\right)$

(n) $\left\{\left[1-\left(\frac{1}{4}\right)^{-2}\cdot\left(\frac{1}{2}\right)^5\right]^3:\left(-\frac{1}{2}\right)^2\right\}+\left[\left(\frac{5}{6}-\frac{1}{3}\right)\cdot\left(\frac{3}{4}\right)\right]^{-1}$

Spiegazione In questo esercizio ci si allena a svolgere delle espressioni numeriche rispettando il corretto ordine nel quale le operazioni devono essere svolte.

Svolgimento Qui di seguito le soluzioni degli esercizi proposti

(a)

$$\left\{\left[\frac{10-3}{12}\cdot\left(-\frac{12}{21}\right)\right]^2+\frac{3}{4}\cdot\left(-\frac{5}{9}\right)\right\}+\left(\frac{5-6}{2}\right)^3$$

$$\left\{\left[\frac{1}{7}\cdot\left(-\frac{1}{21}\right)\right]^2+\frac{1}{4}\cdot\left(-\frac{5}{3}\right)\right\}+\left(-\frac{1}{2}\right)^3$$

$$\left\{\left[-\frac{1}{3}\right]^2+\frac{1}{4}\cdot\left(-\frac{5}{3}\right)\right\}-\frac{1}{8}$$

$$\frac{1}{9}-\frac{5}{12}-\frac{1}{8}$$

$$\frac{8-30-9}{72}$$

$$\frac{-31}{72}$$

.

(b)

$$\left\{\left[\left(\frac{3}{4}\right)^5\right]^2\cdot\frac{4^8}{3^8}+\frac{5}{4}\right\}\cdot\frac{4}{9}-\frac{2}{3}$$

$$\left\{\frac{3^{10}}{4^{10}}\cdot\frac{4^8}{3^8}+\frac{5}{4}\right\}\cdot\frac{4}{9}-\frac{2}{3}$$

$$\left\{\frac{3^2}{4^2}+\frac{9}{4}\right\}\cdot\frac{4}{9}-\frac{2}{3}$$

$$\left\{\frac{3^2+36}{4^2}\right\}\cdot\frac{4}{9}-\frac{2}{3}$$

$$\frac{45}{4^2}\cdot\frac{4}{9}-\frac{2}{3}$$

$$\frac{5}{4}-\frac{2}{3}$$

$$\frac{15-12}{12}$$

$$\frac{1}{4}$$

.

(c) $\xi=-\frac{1}{2}$.

(d) $\xi=-\frac{3}{2}$.

(e) $\xi=-1$.

(f) 3.

(g) $\frac{13}{400}$.

(h) $\frac{13}{9}$.

(i) 16.

(j) $\frac{1}{10}$.

(k) $\frac{10}{7}$.

(l) $\frac{3}{5}$.

(m) $-\frac{1}{2}$.

(n) 10.