

VERIFICA DI ALGEBRA – OPERAZIONI CON I NUMERI RELATIVI

ESEGUI TUTTI GLI ESERCIZI SUL FOGLIO DI PROTOCOLLO.

1. Riscrivi i seguenti numeri in notazione scientifica:

2 punti 0

0,00000769

45.370.000.000

0,00000003

127.900.000

2.

3. Scrivi il risultato delle seguenti operazioni:

4 punti 1,75

a. $\left(-\frac{3}{7}\right)^0 =$

i. $0^n = \emptyset$

con $n \neq 0$

b. $\sqrt{+25} =$

j. $a^1 = a$

c. $\sqrt{-7} =$

k. $1^n =$

d. $-\sqrt{-9} =$

l. $\frac{a}{0} =$ ($a \in \mathbb{N}_0$)

e. $\left(-\frac{4}{9}\right)^2 =$

m. $\frac{0}{a} =$ ($a \in \mathbb{N}_0$)

f. $\left(-\frac{5}{6}\right)^3 =$

n. $\frac{a}{1} =$

g. $\left(-\frac{4}{3}\right)^{-3} =$

o. $\frac{0}{0}$ impossibile

h. $0^0 =$

p. $\frac{a}{a} =$

4. Risolvi le seguenti operazioni:

3 punti 1,5

a. $(-3) - (-5) + (-7) - (-2) + (-4) - (-3) =$

b. $\left(-\frac{5}{6}\right) - \left(+\frac{1}{3}\right) - \left(-\frac{7}{9}\right) + \left(-\frac{5}{18}\right) + \left(-\frac{1}{6}\right) =$

c. $\left(-\frac{4}{9}\right) \cdot \left(+\frac{3}{5}\right) =$

d. $\left(-\frac{21}{16}\right) \cdot \left(-\frac{3}{14}\right) =$

e. $\left(+\frac{25}{18}\right) : \left(-\frac{15}{12}\right) =$

f. $\left(+\frac{3}{8}\right) : (-9) =$

5. Calcola il valore delle seguenti espressioni:

$$-(6 + 2 - 4 \cdot 3) : [5 \cdot 3 + 2 \cdot (-5) - 1] - 6 + 4 \cdot 3 - 10 =$$

2 punti 1

$$(-4)^3 \cdot (-4)^2 : (-4)^3 + 5 - 6 \cdot 2 - 3 =$$

2 punti 1

$$\left[\left(-\frac{1}{2} \right) \cdot \left(-\frac{1}{2} + \frac{2}{3} - \frac{2}{5} \right) : \frac{7}{20} \right] + \left(\frac{3}{8} - \frac{1}{4} \right) =$$

3 punti 1

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

4 punti 1

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

3 punti 2

$$\left\{ \left[\left(1 - \frac{3}{5} - \frac{1}{3} \right) \cdot \left(-\frac{2}{3} \right)^{-2} : \left(-\frac{2}{5} \right) \right]^5 : \left(\frac{1}{8} - \frac{1}{2} \right)^3 \right\}^4 : \left(-1 - \frac{5}{3} \right)^{-7} =$$

4 punti 1

6. Moltiplica $-4/3$ per la somma di $+3/4$ e $-1/3$ e dividi il risultato per il prodotto di $-15/4$ e $+2/9$.

3 punti 2

$$\textcircled{1} \quad 0,00000769 = 10^{-6} \times 7,69$$

$$1279000000 = 10^8 \times 12,79$$

$$0,000000003 = 10^{-9} \times 3$$

$$1279000000 = 10^9 \times 1,279$$

$$453700000000 = 10^{10} \times 4,537$$

$$\textcircled{2} \quad \left(-\frac{3}{7}\right)^0 = 1 \quad \sqrt{+25} = \underline{25} \quad \sqrt{-4} = \textcircled{7} \quad -\sqrt{-9} = \underline{+9} \quad \left(-\frac{4}{9}\right)^2 = ?$$

$$\left(-\frac{5}{6}\right)^3 = ? \quad \left(-\frac{4}{3}\right)^{-3} = \underline{-\frac{4}{3}} \quad 0^0 = \text{non ha significato}$$

$$0^n = 0 \quad a^1 = a \quad 1^n = 1 \quad \frac{a}{0} = \text{indeterminabile} \quad \frac{0}{a} = \frac{0}{2} = \underline{0} \quad \frac{2}{2} = \underline{1} \quad \frac{2}{1} = \underline{2} \quad \frac{0}{0} = \text{indeterminabile}$$

$$\textcircled{4} \quad (-3) - (-5) + (-7) - (-2) + (-4) - (-3) =$$

$$(+8) + (+9) + (+7) - (+24) \quad -3 + 5 - 7 + 2 - 4 + 3 = -4$$

$$b \quad \left(-\frac{5}{6}\right) - \left(+\frac{1}{3}\right) - \left(-\frac{7}{9}\right) + \left(-\frac{5}{18}\right) - \left(+\frac{1}{6}\right)$$

$$\left(+\frac{3}{6}\right) - \left(+\frac{9}{18}\right) + \left(-\frac{1}{6}\right) \left\{ \begin{array}{l} \text{NO} \end{array} \right. \quad -\frac{5}{6} - \frac{1}{3} + \frac{7}{9} - \frac{5}{18} - \frac{1}{6} =$$

$$\left(-\frac{18}{18}\right) + \left(-\frac{1}{6}\right) = \underline{-\frac{19}{18}}$$

$$\textcircled{6} \quad c = \left(-\frac{4}{3}\right) \cdot \left(+\frac{3}{5}\right) = \underline{-\frac{4}{5}}$$

$$d = \left(\frac{3}{16}\right) \cdot \left(-\frac{3}{14}\right) = \underline{-\frac{9}{224}}$$

$$e \quad \left(+\frac{25}{18}\right) : \left(-\frac{15}{12}\right) = \left(+\frac{25}{18}\right) \cdot \left(-\frac{2}{15}\right) = \underline{-\frac{10}{9}}$$

$$f \quad \left(+\frac{3}{8}\right) : (-9) = ?$$

$$\begin{aligned}
 & \textcircled{5} 8 - (6 + 2 - 4 \cdot 3) : [5 \cdot 3 + 2 \cdot (-5) - 1] - \cancel{\left(\frac{1+1}{2}\right)} 6 + 4 \cdot 3 - 10 = \\
 & = -(6 + 2 - 12) : [15 + 2 \cdot (-5) - 1] - 6 + 12 - 10 = \\
 & = -(-4) : [15 - 10 - 1] - 6 + 12 - 10 = \\
 & = -(-4) : [4] - 6 + 12 - 10 = \\
 & = -(-4) : [4] - 6 + 12 - 10 =
 \end{aligned}$$

$$= -1 - 6 + 12 - 10 = \textcircled{-5} - 3$$

$$6 (-4)^3 \cdot (-4)^2 : (-4)^3 + 5 - 6 \cdot 2 - 3 =$$

$$= (-4)^5 : (-4)^3 + 5 - 6 \cdot 2 - 3 =$$

$$= (-4)^2 + 5 - 6 \cdot 2 - 3 =$$

$$= (-4)^2 + 5 - 12 - 3 =$$

$$= \cancel{(-4)^2} + \textcircled{16} + 5 - 12 - 3 = \textcircled{26} + 6$$

$$c \left[\left(-\frac{1}{2}\right) \cdot \left(-\frac{1}{2} + \frac{2}{3} - \frac{2}{3}\right) : \frac{7}{20} \right] + \left(\frac{3}{8} - \frac{1}{4}\right) =$$

$$= \left[\left(-\frac{1}{2}\right) \cdot \left(\frac{-15 + 20 - 12}{30}\right) : \frac{7}{20} \right] + \left(\frac{3-2}{8}\right) =$$

$$= \left[\left(-\frac{1}{2}\right) \cdot \left(\frac{-7}{30}\right) : \frac{7}{20} \right] + \left(\frac{1}{8}\right) = \text{Segno / Segno}$$

$$= \cancel{\left(\frac{-1}{2}\right)} \left[\frac{-7}{60} : \frac{7}{20} \right] + \left(\frac{1}{8}\right) =$$

$$= \left[\frac{-7}{60} \cdot \frac{20}{7} \right] + \left(\frac{-1}{8}\right) = \{$$

$$= \left\{ \left[\begin{pmatrix} 1 & -2 \\ -2 & 13 \end{pmatrix} \cdot \begin{pmatrix} -5 \\ 2 \\ 1 \end{pmatrix} \right] : \begin{pmatrix} -3 \\ 8 \end{pmatrix} \right\}^4 : \begin{pmatrix} -8 \\ 3 \end{pmatrix}^{-12} =$$

$$= \left\{ \left[\begin{pmatrix} 5 \\ 13 \end{pmatrix}^{-2} \right]^5 : \begin{pmatrix} -3 \\ 8 \end{pmatrix}^{-2} \right\}^4 : \begin{pmatrix} -8 \\ 3 \end{pmatrix}^{-12} =$$

$$= \left\{ \left[\begin{pmatrix} 5 \\ 13 \end{pmatrix}^{-3} : \begin{pmatrix} -3 \\ 8 \end{pmatrix}^{-2} \right] \right\} : \begin{pmatrix} -8 \\ 3 \end{pmatrix}^{-12} =$$

$$= \left\{ \left[\begin{pmatrix} 5 \\ 13 \end{pmatrix}^{-3} : \begin{pmatrix} -8 \\ 3 \end{pmatrix}^{-12} \right] \right\} : \begin{pmatrix} -8 \\ 3 \end{pmatrix}^{-12} = \text{Segue}$$

$$= \left\{ \begin{pmatrix} +40 \\ 39 \end{pmatrix}^{-1} \right\} : \begin{pmatrix} -8 \\ 3 \end{pmatrix}^{-12} =$$

$$= \left\{ \begin{pmatrix} +40 \\ 39 \end{pmatrix}^{-1} : \begin{pmatrix} -8 \\ 3 \end{pmatrix}^{-12} \right\} =$$

$$= \begin{pmatrix} 5 \\ +40 \\ 39 \\ 13 \end{pmatrix}^{-1} \cdot \begin{pmatrix} 1 \\ -3 \\ 8 \\ 1 \end{pmatrix}^{-12} = \begin{pmatrix} 5 \\ +5 \\ 13 \end{pmatrix}^{-6}$$

(5 6

~~$$-\frac{4}{3} \cdot \left[\begin{pmatrix} 13-1 \\ 4 \end{pmatrix} : \begin{pmatrix} -15+2 \\ 9 \end{pmatrix} \right] - \frac{4}{3} \cdot \left[\begin{pmatrix} +3-1 \\ 4 \end{pmatrix} : \begin{pmatrix} -15+2 \\ 9 \end{pmatrix} \right] = -\frac{4}{3} \cdot \left[\begin{pmatrix} +3-1 \\ 4 \end{pmatrix} : \begin{pmatrix} -15+2 \\ 9 \end{pmatrix} \right]$$~~

~~$$-\frac{4}{3} \cdot \left[\begin{pmatrix} 19-4 \\ 12 \end{pmatrix} : \begin{pmatrix} 35+8 \\ 38 \end{pmatrix} \right] - \frac{4}{3} \cdot \left[\begin{pmatrix} +3-1 \\ 4 \end{pmatrix} : \begin{pmatrix} -15+2 \\ 9 \end{pmatrix} \right]$$~~

~~$$-\frac{4}{3} \cdot \left[\begin{pmatrix} -5 \\ 12 \end{pmatrix} : \begin{pmatrix} -127 \\ 36 \end{pmatrix} \right] - \frac{4}{3} \cdot \left[\begin{pmatrix} +9-4 \\ 12 \end{pmatrix} : \begin{pmatrix} -5 \\ 6 \end{pmatrix} \right]$$~~

Segue $-\frac{4}{3} \cdot \left[\begin{pmatrix} +1 \\ -5 \\ 12 \\ 2 \end{pmatrix} : \begin{pmatrix} 1 \\ -6 \\ 8 \\ 1 \end{pmatrix} \right] = -\frac{4}{3} \cdot \left[\begin{pmatrix} 1 \\ 1 \\ 2 \\ 1 \end{pmatrix} : \begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix} \right]$

$$\left(-\frac{1}{3}\right) + \left(-\frac{1}{8}\right) = \frac{-8-3}{24} = -\frac{11}{24}$$

Copiaturo

$$d \quad 1 - \left(+\frac{3}{2} - \frac{7}{9}\right)^2 \cdot \left[\left(-\frac{1}{2}\right)^3 + \frac{3}{9} - \frac{1}{5}\right] \cdot \left[-\left(\frac{2}{5} - 1\right)^2 - 1\right] - \left(1 + \frac{1}{2}\right)$$

$$= 1 - \left(\frac{6}{4} - \frac{7}{9}\right)^2 \cdot \left[\left(-\frac{1}{2} + \frac{3}{9} - \frac{1}{5}\right)\right] \cdot \left[-\left(\frac{2-5}{5}\right)^2 - 1\right] - \left(\frac{2+1}{2}\right)$$

$$= 1 - \left(\frac{1}{8}\right)^2 \cdot \left[\frac{-4-16}{40}\right] \cdot \left[-\left(-\frac{3}{5}\right)^2 - 1\right] - \left(+\frac{3}{2}\right) \quad \text{calcolo}$$

$$= 1 - \left(-\frac{1}{8}\right)^2 \cdot \left(\frac{23}{80}\right) \cdot \left[\frac{-9-25}{25}\right] - \left(+\frac{3}{2}\right)$$

$$= 1 - \left(\frac{1}{64}\right) \cdot \left(\frac{23}{80}\right) \cdot \left[\frac{-9-25}{25}\right] - \left(+\frac{3}{2}\right)$$

$$= 1 - \left(\frac{1}{64}\right) \cdot \left(\frac{23}{80}\right) \cdot \left(\frac{34}{39}\right) ? \quad \text{Non si capisce}$$

$$e \quad \left[\left(-\frac{3}{5}\right)^4 \cdot \left(-\frac{3}{5}\right)^6 \cdot \left(\frac{3}{5}\right)^{12}\right]^2 \cdot \left[\left(-\frac{3}{5}\right)^2\right]^{-2} =$$

$$= \left[\left(-\frac{3}{5}\right)^{10} \cdot \left(\frac{3}{5}\right)^{12}\right]^2 \cdot \left[\left(-\frac{3}{5}\right)^2\right]^{-2} =$$

$$= \left[\left(-\frac{3}{5}\right)^2\right]^2 \cdot \left[\left(-\frac{3}{5}\right)^2\right]^{-2} = \left(-\frac{3}{5}\right)^0 = +1$$

f

$$\left\{ \left[\left(1 - \frac{3}{5} - \frac{1}{3}\right) \cdot \left(-\frac{2}{3}\right)^{-2} \cdot \left(-\frac{2}{5}\right) \right]^5 \cdot \left(\frac{1}{8} - \frac{1}{2}\right)^3 \right\}^4 \cdot \left(-1 - \frac{5}{3}\right)^{-7} =$$

$$= \left\{ \left[\left(\frac{15-9-5}{15}\right) \cdot \left(-\frac{2}{3}\right)^{-2} \cdot \left(-\frac{2}{5}\right) \right]^5 \cdot \left(\frac{1-4}{8}\right)^3 \right\}^4 \cdot \left(\frac{-3-5}{3}\right)^{-7} =$$

$$= \left\{ \left[\left(\frac{1}{15}\right) \cdot \left(-\frac{2}{3}\right)^{-2} \cdot \left(-\frac{2}{5}\right) \right]^5 \cdot \left(-\frac{3}{8}\right)^3 \right\}^4 \cdot \left(-\frac{8}{3}\right)^{-7} \quad \text{Copiato}$$

Procedi in eu k

$$\begin{aligned}
 & d \quad 1 - \left(+\frac{3}{2} - \frac{2}{4} \right)^2 - \left[\left(-\frac{1}{2} \right)^3 + \frac{3}{4} - \frac{1}{5} \right] : \left[- \left(\frac{2}{5} - 1 \right)^2 - 1 \right] - \left(1 + \frac{1}{2} \right) \quad \text{RONDINI} \\
 & = 1 - \left(\frac{+6-7}{4} \right)^2 - \left[\left(-\frac{1}{2} \right)^3 + \frac{3}{4} - \frac{1}{5} \right] : \left[- \left(\frac{+2-5}{5} \right)^2 - 1 \right] - \left(\frac{+2+1}{2} \right) \quad \text{Copiato} \\
 & = 1 - \left(-\frac{1}{4} \right)^2 - \left[\left(-\frac{1}{2} \right)^3 + \frac{3}{4} - \frac{1}{5} \right] : \left[- \left(-\frac{3}{5} \right)^2 - 1 \right] - \left(+\frac{3}{2} \right) \\
 & = 1 - \left(-\frac{1}{16} \right)^2 - \left[\left(-\frac{1}{8} \right) + \frac{3}{4} - \frac{1}{5} \right] : \left[- \left(\frac{3}{5} \right)^2 - 1 \right] - \left(+\frac{3}{2} \right) \\
 & = 1 - \left(-\frac{1}{16} \right)^2 - \left[\frac{-5+30-8}{40} \right] : \left[- \left(\frac{3}{5} \right)^2 - 1 \right] - \left(+\frac{3}{2} \right) \\
 & = 1 - \left(-\frac{1}{16} \right)^2 - \left[\frac{17}{40} \right] : \left[- \frac{3-5}{5} \right] - \left(+\frac{3}{2} \right) \\
 & = 1 - \left(-\frac{1}{16} \right)^2 - \frac{17}{40} : \left(+\frac{2}{5} \right) - \left(+\frac{3}{2} \right) \\
 & = 1 - \left(-\frac{1}{16} \right)^2 - \frac{17}{40} \cdot \left(+\frac{5}{2} \right) - \left(+\frac{3}{2} \right) \\
 & = 1 - \left(-\frac{1}{16} \right)^2 - \frac{17}{64} - \left(+\frac{3}{2} \right) \\
 & = 1 - \left(-\frac{1}{256} \right) - \frac{17}{64} - \left(+\frac{3}{2} \right) = \frac{-1-68-128}{256} = \frac{197}{256}
 \end{aligned}$$

