

Ejercicio nº 1.-

Calcula:

a) $(12 - 15 + (-3)) - (-8 + 4 - (-7) - 18)$

b) $14 : (-2) + (-5) : 5 - (-3) + 12$

c) $-3 + 7 [-4 - (-12) : (-6) + 4 \times (-3)]$

d) $7 \cdot [12 + (-6 + 4 + 8)] - (-2) \cdot [5 - 3 \cdot (2 + 3 - 6)]$

Solución:

a) $(12 - 15 + (-3)) - (-8 + 4 - (-7) - 18) = (12 - 15 - 3) - (-8 + 4 + 7 - 18) = -6 - (-15) =$
 $= -6 + 15 = 9$

b) $14 : (-2) + (-5) : 5 - (-3) + 12 = -7 - 1 + 3 + 12 = 7$

c) $-3 + 7 [-4 - (-12) : (-6) + 4 \times (-3)] = -3 + 7 [-4 - 2 - 12] = -3 + 7 \times (-18) = -3 - 126 = -129$

d) $7 \cdot [12 + (-6 + 4 + 8)] - (-2) \cdot [5 - 3 \cdot (2 + 3 - 6)] = 7 [12 + 6] + 2 \cdot [5 - 3 \cdot (-1)] = 7 \cdot [18] + 2 \cdot [5 + 3] = 126 + 2 \cdot 8 = 126 + 16 = 142$

Ejercicio nº 2.-

Calcula y simplifica:

a) $\frac{4}{5} - \frac{3}{2} + \frac{1}{3} \cdot \frac{7}{2}$

b) $1 - \frac{1}{3} \left(2 + \frac{1}{4} \right) + \frac{1}{12} : \frac{1}{5}$

Solución:

a) $\frac{4}{5} - \frac{3}{2} + \frac{1}{3} \cdot \frac{7}{2} = \frac{4}{5} - \frac{3}{2} + \frac{7}{6} = \frac{24}{30} - \frac{45}{30} + \frac{35}{30} = \frac{14}{30} = \frac{7}{15}$

b) $1 - \frac{1}{3} \left(\frac{2}{1} + \frac{1}{4} \right) + \frac{1}{12} : \frac{1}{5} =$

$= 1 - \frac{1}{3} \left(\frac{8}{4} + \frac{1}{4} \right) + \frac{5}{12} = 1 - \frac{1}{3} \cdot \frac{9}{4} + \frac{5}{12} = 1 - \frac{9}{12} + \frac{5}{12} = \frac{12}{12} - \frac{9}{12} + \frac{5}{12} = \frac{8}{12} = \frac{2}{3}$

Ejercicio nº 3.-

a) Calcula:

$$\left(\frac{2}{5}\right)^{-2}, \left(\frac{5}{2}\right)^3, 5^{-5}$$

b) Simplifica:

$$\frac{(3^2)^5 \cdot 9^2}{27}$$

c) Simplifica:

$$\frac{12^4 \cdot 3^{-2}}{3^2 \cdot 4^{-1}}$$

Solución:

$$\text{a) } \left(\frac{2}{5}\right)^{-2} = \left(\frac{5}{2}\right)^2 = \frac{25}{4}; \left(\frac{5}{2}\right)^3 = \frac{5^3}{2^3} = \frac{125}{8}; 5^{-5} = \frac{1}{5^5} = \frac{1}{3125}$$

$$\text{b) } \frac{(3^2)^5 \cdot 9^2}{27} = \frac{3^{10} \cdot (3^2)^2}{3^3} = \frac{3^{10} \cdot 3^4}{3^3} = \frac{3^{14}}{3^3} = 3^{11}$$

$$c) \frac{12^4 \cdot 3^{-2}}{3^2 \cdot 4^{-1}} = \frac{3^4 \cdot 4^4 \cdot 3^{-2}}{3^2 \cdot 4^{-1}} = \frac{3^4 \cdot 4^4 \cdot 4}{3^2 \cdot 3^2} = \frac{3^4 \cdot 4^5}{3^4} = 4^5$$

Ejercicio nº 4.-

Calcula:

$$a) \left(\frac{5}{3}\right)^{-2} \cdot \left(\frac{2}{3}\right)^{-1} + \left(\frac{3}{4}\right)^{-2} \cdot (4-6)$$

$$b) \left(\frac{7}{4} - \frac{5}{3}\right)^4 : \left(\frac{2}{5} - \frac{1}{2}\right)^4$$

Solución:

$$a) \left(\frac{5}{3}\right)^{-2} \cdot \left(\frac{2}{3}\right)^{-1} + \left(\frac{3}{4}\right)^{-2} \cdot (4-6) = \left(\frac{3}{5}\right)^2 \cdot \frac{3}{2} + \left(\frac{4}{3}\right)^2 \cdot (-2) = \frac{9}{25} \cdot \frac{3}{2} - \frac{32}{9} =$$

$$= \frac{27}{50} - \frac{32}{9} = \frac{243 - 1600}{450} = -\frac{1357}{450}$$

$$\text{b) } \left(\frac{7}{4} - \frac{5}{3}\right)^4 : \left(\frac{2}{5} - \frac{1}{2}\right)^4 = \left(\frac{21-20}{12}\right)^4 : \left(\frac{4-5}{10}\right)^4 = \left(\frac{1}{12}\right)^4 : \left(-\frac{1}{10}\right)^4 = \left(-\frac{10}{12}\right)^4 = \left(-\frac{5}{6}\right)^4 = \frac{625}{1296}$$