

Semplifica le seguenti espressioni:

$$\begin{aligned}
 1. \quad & 0, \bar{3} x^2 y - (1, \bar{6} x^2 y) + (-1,5 xy) + \left(-\frac{2}{3} x^2 y\right) - (0,5 xy) - (1, \bar{2} xy - xy) - x^2 y \\
 & = \frac{1}{3} x^2 y - \frac{5}{3} x^2 y - \frac{3}{2} xy - \frac{2}{3} x^2 y - \frac{1}{2} xy - \left(\frac{11}{9} xy - xy\right) - x^2 y = -3x^2 y - 2 xy - \frac{2}{9} xy = -3x^2 y - \frac{20}{9} xy
 \end{aligned}$$

$$\begin{aligned}
 2. \quad & \left(\frac{1}{10} x^3 + 2x^3 - 0,3 x^3\right) (-5y^2) - \left(\frac{2}{3} - 1\right) (3x^3 y^2) - \frac{15}{4} xy^2 \left(-\frac{2}{3} x^2 + \frac{2}{5} x^2\right) \\
 & = \left(\frac{1}{10} x^3 + 2x^3 - \frac{3}{10} x^3\right) (-5y^2) - \left(-\frac{1}{3}\right) (3x^3 y^2) - \frac{15}{4} xy^2 \left(-\frac{4}{15} x^2\right) = \\
 & = \frac{9}{5} x^3 (-5y^2) + x^3 y^2 + x^3 y^2 = -9x^3 y^2 + 2 x^3 y^2 = -7x^3 y^2
 \end{aligned}$$

$$\begin{aligned}
 3. \quad & -a^4 b^2 : b + a^4 b^2 : (-a) - a^4 b^3 : (a^2 b) + (a^2 b)(ab) + a^2 (a^2 b) + a^2 b (-b) \\
 & = -a^4 b - a^3 b^2 - a^2 b^2 + a^3 b^2 + a^4 b - a^2 b^2 = -2a^2 b^2
 \end{aligned}$$

$$\begin{aligned}
 4. \quad & \left[2xy^2 + x(-y)^2 + \left(\frac{2}{5} x^3 y^4\right) : \left(\frac{1}{10} x^2 y^2\right) + (-xy)^2 : x\right]^2 : (4xy^3) \\
 & = [2xy^2 + xy^2 + 4xy^2 + x^2 y^2 : x]^2 : (4xy^3) = [7xy^2 + xy^2]^2 : (4xy^3) = (8xy^2)^2 : (4xy^3) = 64 x^2 y^4 : (4xy^3) = 16xy
 \end{aligned}$$

$$\begin{aligned}
 5. \quad & -[(-2x)^2 - (-y)^3] + \left\{(xy^2)^3 : \left(\frac{1}{2} xy\right)^3 - [x^2 y^3 - 2y^3 + 3x(-x) - (-xy)(-xy^2)]\right\} \\
 & = -[4x^2 + y^3] + [(2y)^3 - (x^2 y^3 - 2y^3 - 3x^2 - x^2 y^3)] = \\
 & = -4x^2 - y^3 + (8y^3 + 2y^3 + 3x^2) = -4x^2 - y^3 + 10 y^3 + 3x^2 = -x^2 + 9y^3
 \end{aligned}$$

$$\begin{aligned}
 6. \quad & (a^{2n})^{n+1} : (a^n)^{2n+1} + (a^{n+3})^2 : (a^2)^{n+2} - a^2 \\
 & = a^{2n^2+2n} : a^{2n^2+n} + a^{2n+6} : a^{2n+4} - a^2 = a^n + a^2 - a^2 = a^n
 \end{aligned}$$

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