

## Operazioni con i monomi

Polynomials: Combining "Like Terms"

Éléments du calcul littéral

## Somma algebrica di monomi

1.  $-4y^2 + 5y^2 - 15y^2 =$
2.  $\frac{1}{2}a + 2b + a - b =$
3.  $7a - 3b + 5b - 12a + 4b + 6a =$
4.  $-4a + 3b - a - 2b + 5a - 4b =$
5.  $-10xy + 4y^2 - 7xy + 11xy - 3y^2 - y^2 =$
6.  $-5x^2y + 6x^2y - 9xy^2 + 3x^2y - 2xy^2 =$
7.  $6x^2y - 9xy^2 + 3x^2y - 5x^2y - 2xy^2 + 9xy^2 =$
8.  $2xy^2 + 6x^2y + 9xy^2 + 3x^2y - 5x^2y - 2xy^2 - 9xy^2 =$
9.  $\frac{1}{3} - 2x + \frac{1}{3}y - \frac{7}{2} - \frac{1}{6}y + \frac{1}{4}x + \frac{19}{6} =$
10.  $\frac{1}{5}x^2y^3 - 5x^2y^3 - \frac{2}{3}x^2y^3 + \frac{7}{15}x^2y^3 + 5x^3y^2 =$
11.  $-3x + (-7a) - (-2x) + (+5a) - (+8a) =$  (\*)
12.  $(8a^2b + 3ab - b^2) + (10ab + 5ab - 8a^2b - 5b^2 - 10ab) - (-3a^2b + 8ab - 3b^2) - 3a^2b =$
13.  $(-2a^2 + 5a - 3b) - (-3b - 2a^2) - (5a - 6) =$
14.  $\left(-\frac{1}{6}cx + \frac{1}{2}bx\right) + \left(\frac{3}{7}ax - \frac{2}{5}bx - \frac{1}{6}cx\right) - \left(\frac{1}{10}bx - \frac{1}{3}cx - \frac{4}{7}ax\right) =$
15.  $y^2 + 3x^2 - [5xy - (2x^3 + 10xy + 3y^2)] - [2x^3 - (-5xy + 10x^3)] - 4y^2 - 10x^3 =$
16.  $2x^3y^3 + 2 + xy^3 - 6x^2y^3 + 3 - xy^3 + 3x^2y^3 - 5 + 2x^2y^3 - 2x^3y^3 =$

(\*) gentile concessione di [stringher.blog.kataweb.it/](http://stringher.blog.kataweb.it/) - Commissione e-learning IPSSCART B. Stringher – Udine

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 Prodotto, divisione e potenze di monomi

$$17. a \cdot a \cdot a =$$

$$18. a^2 \cdot a^2 \cdot a^2 =$$

$$19. (-12x^4y) \div (+6x^2) =$$

$$20. (-18x^6y^4z) \div (+6x^6y^2z) =$$

$$21. \left(-\frac{3}{4}x^3y\right) \cdot \left(-\frac{4}{7}xy^2\right) =$$

$$22. \left(+\frac{3}{4}x^3y^2z\right) \div \left(-\frac{9}{4}xy\right) =$$

$$23. \left(-\frac{3}{4}x^3y^2z\right) \cdot \left(+\frac{9}{4}xy\right) =$$

$$24. \left(\frac{21}{5}x^2y^4z\right) \cdot \left(\frac{15}{7}xy^2z\right) =$$

$$25. \left(\frac{21}{5}x^2y^4z\right) \div \left(-\frac{14}{5}xy^2z\right) =$$

$$26. \left(-\frac{4}{3}x^2\right) \cdot \left(\frac{2}{5}y\right) =$$

$$27. \left(-\frac{15}{2}x^3y^2z\right) : \left(-\frac{5}{4}xyz\right) =$$

$$28. 5a^3b^2 : (-2ab) =$$

$$29. (+6a^5b^3c) \div (-3ab^4c^3) =$$

$$30. \left(-\frac{1}{2}ab^2c^3\right)^3 : \left(-\frac{3}{2}ab^3c^2\right)^2 =$$

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## Esercizi riassuntivi

$$31. (x^3y^2 - 7x^3y^2 + 3x^3y^2) \div (5x^2y - 2x^2y) =$$

$$32. \left[ \frac{1}{2}a^6b^2 \cdot \left(-\frac{1}{2}ab^2\right) + \frac{1}{4}a^4b^2 \cdot \frac{2}{3}a^3b^2 - 2a^7b^4 \right] : \left(-\frac{5}{2}a^2b^3\right) =$$

$$33. \left(-\frac{3}{4}a^2bc^3\right) \cdot \left(+\frac{10}{9}abc^2\right) - \left(\frac{5}{8}a^3c\right) \cdot \left(\frac{2}{5}b^2c^4\right) =$$

$$34. 12x^3y^2 : (-4xy^2) - 2xy \cdot (-3xy^3) + (15x^2y) : (3y) - 6x^2y^4 = \quad (*)$$

$$35. 2x^4 : \left(-\frac{2}{3}x^3\right) + \frac{4}{3}x^3y^2 : \left(-\frac{1}{3}xy\right)^2 + (-2xy)^2 : (xy^2) = \quad (*)$$

$$36. \left[ ab \cdot \left(\frac{1}{2}a^2b^3c^2\right)^2 \right]^3 : \left[ -a \cdot \left(-\frac{1}{2}ab^2c\right)^2 \right]^5 + \frac{4}{3}a^2bc^6m^4 : \left(-\frac{1}{3}a^2c^4m^4\right) = \quad (*)$$

$$37. \left[ \left(-\frac{1}{3}x^2y^3z^4\right)^6 \div \left(-\frac{1}{3}x^2y^3z^4\right)^2 \right]^3 \div \left[ \left(-\frac{1}{3}x^2y^3z^4\right)^2 \cdot \left(-\frac{1}{3}x^2y^3z^4\right)^3 \right]^2 - \frac{1}{3}x^4y^6z^8 =$$

$$38. \left\{ \left(-\frac{3}{4}xy^2\right)^5 : \left[-\frac{3}{4}x^3y^3 : x^2y\right]^2 \right\}^3 : \left(-\frac{3}{4}xy^2\right)^6 =$$

$$39. \left\{ -y^2 - \left[\frac{1}{2}x^2 - \left(\frac{3}{4}x^2 - 4y^2 + xy\right) - \left(\frac{3}{2}xy - \frac{2}{3}x^2\right)\right] \right\} \cdot \frac{3}{5} =$$

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**Soluzioni esercizi di somma algebrica di monomi**

$$\begin{aligned}
 & -4y^2 + 5y^2 - 15y^2 = \\
 & = +1y^2 - 15y^2 = \\
 & = -14y^2
 \end{aligned}$$

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$  \begin{aligned}  & \frac{1}{2}a + 2b + a - b = \\  & = \frac{1}{2}a + a + 2b - b \\  & = +\frac{3}{2}a + b  \end{aligned}  $	$  \begin{aligned}  & (1/2)a + 2b + a - b = \\  & (1/2)a + 2b + a - b = \\  & (1/2)a + a + 2b - b = \\  & = (3/2)a + b  \end{aligned}  $
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$  \begin{aligned}  & 7a - 3b + 5b - 12a + 4b + 6a = \\  & = 7a - 12a + 6a - 3b + 5b + 4b = \\  & = -5a + 6a + 2b + 4b = \\  & = a + 6b  \end{aligned}  $	$  \begin{aligned}  & 7a - 3b + 5b - 12a + 4b + 6a = \\  & = 7a - 3b + 5b - 12a + 4b + 6a = \\  & = 7a - 12a + 6a - 3b + 5b + 4b = \\  & = (7-12+6)a + (-3+5+4)b = \\  & = a + 6b =  \end{aligned}  $
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$  \begin{aligned}  & -4a + 3b - a - 2b + 5a - 4b = \\  & = -4a - a + 5a - 4b + 3b - 2b = \\  & = -5a + 5a - b - 2b = \\  & = -3b  \end{aligned}  $	$  \begin{aligned}  & -4a + 3b - a - 2b + 5a - 4b = \\  & = -4a + 3b - a - 2b + 5a - 4b = \\  & = -4a - a + 5a - 2b - 4b + 3b = \\  & = (-4-1+5)a + (-2-4+3)b = \\  & = -3b  \end{aligned}  $
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$  \begin{aligned}  & -10xy + 4y^2 - 7xy + 11xy - 3y^2 - y^2 = \\  & = -10xy - 7xy + 11xy - 3y^2 - y^2 + 4y^2 = \\  & = -17xy + 11xy - 4y^2 + 4y^2 = \\  & = -6xy  \end{aligned}  $	$  \begin{aligned}  & -10xy + 4y^2 - 7xy + 11xy - 3y^2 - y^2 = \\  & = -10xy + 4y^2 - 7xy + 11xy - 3y^2 - y^2 = \\  & = -10xy - 7xy + 11xy + 4y^2 - 3y^2 - y^2 = \\  & = (-10-7+11)xy + (4-3-1)y^2 = \\  & = -6xy  \end{aligned}  $
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$  \begin{aligned}  & -5x^2y + 6x^2y - 9xy^2 + 3x^2y - 2xy^2 = \\  & = -5x^2y + 6x^2y + 3x^2y - 2xy^2 - 9xy^2 = \\  & = 1^2y + 3x^2y - 11xy^2 = \\  & = 4x^2y - 11xy^2  \end{aligned}  $	$  \begin{aligned}  & -5x^2y + 6x^2y - 9xy^2 + 3x^2y - 2xy^2 = \\  & = -5x^2y + 6x^2y - 9xy^2 + 3x^2y - 2xy^2 = \\  & = -5x^2y + 6x^2y + 3x^2y - 2xy^2 - 9xy^2 = \\  & = (-5+6+3)x^2y + (-2-9)xy^2 = \\  & = 4x^2y - 11xy^2 =  \end{aligned}  $
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$$\begin{aligned}
 &6x^2y - 9xy^2 + 3x^2y - 5x^2y - 2xy^2 + 9xy^2 = \\
 &= 6x^2y + 3x^2y - 5x^2y - 2xy^2 + 9xy^2 - 9xy^2 = \\
 &= 9x^2y - 5x^2y + 7xy^2 - 9xy^2 = \\
 &= 4x^2y - 2xy^2
 \end{aligned}$$

$$\begin{aligned}
 &6x^2y - 9xy^2 + 3x^2y - 5x^2y - 2xy^2 + 9xy^2 = \\
 &= 6x^2y - 9xy^2 + 3x^2y - 5x^2y - 2xy^2 + 9xy^2 = \\
 &= 6x^2y + 3x^2y - 5x^2y + 9xy^2 - 2xy^2 - 9xy^2 = \\
 &= (6+3-5)x^2y + (-9-2+9)xy^2 = \\
 &= 4x^2y - 2xy^2 =
 \end{aligned}$$

$$\begin{aligned}
 &2xy^2 + 6x^2y + 9xy^2 + 3x^2y - 5x^2y - 2xy^2 - 9xy^2 = \\
 &= 2xy^2 - 2xy^2 + 9xy^2 - 9xy^2 + 6x^2y + 3x^2y - 5x^2y = \\
 &= 9xy^2 - 5xy^2 = \\
 &= 4x^2y
 \end{aligned}$$

$$\begin{aligned}
 &2xy^2 + 6x^2y + 9xy^2 + 3x^2y - 5x^2y - 2xy^2 - 9xy^2 = \\
 &= 2xy^2 + 6x^2y - 9xy^2 + 3x^2y - 5x^2y - 2xy^2 + 9xy^2 = \\
 &= 6x^2y + 3x^2y - 5x^2y = \\
 &= (6+3-5)x^2y = \\
 &= 4x^2y =
 \end{aligned}$$

$$\begin{aligned}
 &\frac{1}{3} - 2x + \frac{1}{3}y - \frac{7}{2} - \frac{1}{6}y + \frac{1}{4}x + \frac{19}{6} = \\
 &= -2x + \frac{1}{4}x + \frac{1}{3}y - \frac{1}{6}y + \frac{19}{6} + \frac{1}{3} - \frac{7}{2} = \\
 &= \frac{-8+1}{4}x + \frac{2-1}{6}y + \frac{19+2-21}{6} = \\
 &= -\frac{7}{4}x + \frac{1}{6}y
 \end{aligned}$$

$$\begin{aligned}
 &\frac{1}{5}x^2y^3 - 5x^2y^3 - \frac{2}{3}x^2y^3 + \frac{7}{15}x^2y^3 + 5x^3y^2 = \\
 &= \left( \frac{3-75-10+7}{15}x^2y^3 \right) + 5x^3y^2 = \\
 &= \left( -\frac{75}{15}x^2y^3 \right) + 5x^3y^2 = \\
 &= -5x^2y^3 + 5x^3y^2
 \end{aligned}$$

$$\begin{aligned}
& -3x + (-7a) - (-2x) + (+5a) - (+8a) = \\
& = -3x - 7a + 2x + 5a - 8a = \\
& = -3x + 2x - 7a + 5a - 8a = \\
& = (-3 + 2)x + (-7 + 5 - 8)a = \\
& = -x - 10a
\end{aligned}$$

$$\begin{aligned}
& (8a^2b + 3ab - b^2) + (10ab + 5ab - 8a^2b - 5b^2 - 10ab) - (-3a^2b + 8ab - 3b^2) - 3a^2b = \\
& (8a^2b + 3ab - b^2) + (10ab + 5ab - 8a^2b - 5b^2 - 10ab) - (-3a^2b + 8ab - 3b^2) - 3a^2b = \\
& = 8a^2b + 3ab - b^2 + 5ab - 8a^2b - 5b^2 + 3a^2b - 8ab + 3b^2 - 3a^2b = \\
& = 3ab + 5ab - 8ab - b^2 - 5b^2 + 3b^2 = \\
& = -3b^2
\end{aligned}$$

$$\begin{aligned}
& (8a^2b + 3ab - b^2) + (10ab + 5ab - 8a^2b - 5b^2 - 10ab) - (-3a^2b + 8ab - 3b^2) - 3a^2b = \\
& = 8a^2b + 3ab - b^2 + 5ab - 8a^2b - 5b^2 + 3a^2b - 8ab + 3b^2 - 3a^2b = \\
& = 8a^2b - 8a^2b + 3a^2b - 3a^2b + 3ab + 5ab - 8ab - 5b^2 + 3b^2 - b^2 = \\
& = -3b^2
\end{aligned}$$

$$\begin{aligned}
& (-2a^2 + 5a - 3b) - (-3b - 2a^2) - (5a - 6) = \\
& = -2a^2 + 5a - 3b + 3b + 2a^2 - 5a + 6 = \\
& = -2a^2 + 2a^2 + 5a - 5a - 3b + 3b + 6 = 6
\end{aligned}$$

$$\begin{aligned}
& \left(-\frac{1}{6}cx + \frac{1}{2}bx\right) + \left(\frac{3}{7}ax - \frac{2}{5}bx - \frac{1}{6}cx\right) - \left(\frac{1}{10}bx - \frac{1}{3}cx + \frac{4}{7}ax\right) = \\
& = -\frac{1}{6}cx + \frac{1}{2}bx + \frac{3}{7}ax - \frac{2}{5}bx - \frac{1}{6}cx - \frac{1}{10}bx + \frac{1}{3}cx - \frac{4}{7}ax = \\
& = +\frac{3}{7}ax - \frac{4}{7}ax + \frac{1}{2}bx - \frac{2}{5}bx - \frac{1}{10}bx - \frac{1}{6}cx - \frac{1}{6}cx + \frac{1}{3}cx = \\
& = \frac{3-4}{7}ax + \frac{5-4-1}{10}bx + \frac{-1-1+2}{6}cx = \\
& = -\frac{1}{7}ax + \frac{0}{10}bx + \frac{0}{6}cx = -\frac{1}{7}ax
\end{aligned}$$

$$\begin{aligned}
& y^2 + 3x^2 - [5xy - (2x^3 + 10xy + 3y^2)] - [2x^3 - (-5xy + 10x^3)] - 4y^2 - 10x^3 = \\
& = y^2 + 3x^2 - [5xy - 2x^3 - 10xy - 3y^2] - [2x^3 + 5xy - 10x^3] - 4y^2 - 10x^3 = \\
& = y^2 + 3x^2 - 5xy + 2x^3 + 10xy + 3y^2 - 2x^3 - 5xy + 10x^3 - 4y^2 - 10x^3 = \\
& = +10x^3 - 10x^3 + 2x^3 - 2x^3 + 3x^2 - 5xy - 5xy + 10xy + y^2 + 3y^2 - 4y^2 = \\
& = +3x^2 - 10xy + 10xy + 4y^2 - 4y^2 = 3x^2
\end{aligned}$$

$$\begin{aligned}
& 2x^3y^3 + 2 + xy^3 - 6x^2y^3 + 3 - xy^3 + 3x^2y^3 - 5 + 2x^2y^3 - 2x^3y^3 = \\
& 2x^3y^3 + 2 + xy^3 - 6x^2y^3 + 3 - xy^3 + 3x^2y^3 - 5 + 2x^2y^3 - 2x^3y^3 = \\
& = 2x^3y^3 - 2x^3y^3 + 2 + 3 - 5 + xy^3 - xy^3 - 6x^2y^3 + 3x^2y^3 + 2x^2y^3 = \\
& = -6x^2y^3 + 3x^2y^3 + 2x^2y^3 = (-6 + 3 + 2)x^2y^3 = -x^2y^3
\end{aligned}$$

### Soluzioni esercizi su prodotto, divisione e potenze di monomi

$$a \cdot a \cdot a = a^3$$

$$a^2 \cdot a^2 \cdot a^2 = a^{2+2+2} = a^6$$

$$(-12x^4y) \div (+6x^2) = -2x^2y$$

$$(-18x^6y^4z) \div (+6x^6y^2z) = -3y^2$$

$$\left(-\frac{3}{4}x^3y\right) \cdot \left(-\frac{4}{7}xy^2\right) = +\frac{3}{7}x^4y^3$$

$$\left(+\frac{3}{4}x^3y^2z\right) \div \left(-\frac{9}{4}xy\right) = -\frac{1}{3}x^2yz$$

$$\left(-\frac{3}{4}x^3y^2z\right) \cdot \left(+\frac{9}{4}xy\right) = -\frac{27}{16}x^4y^3z$$

$$\left(\frac{21}{5}x^2y^4z\right) \cdot \left(\frac{15}{7}xy^2z\right) = +9x^3y^6z^2$$

$$\left(\frac{21}{5}x^2y^4z\right) \div \left(-\frac{14}{5}xy^2z\right) = -\frac{3}{2}xy^2$$

$$\left(-\frac{4}{3}x^2\right) \cdot \left(\frac{2}{5}y\right) = -\frac{8}{15}x^2y$$

$$\left(-\frac{15}{2}x^3y^2z\right) : \left(-\frac{5}{4}xyz\right) = 6x^2y$$

$$5a^3b^2 : (-2ab) = -\frac{5}{2}a^2b$$

$$\left(+6a^5b^3c\right) : \left(-3ab^4c^3\right) = -2a^4b^{-1}c^{-2} \left(\text{oppure} = -\frac{2a^4}{bc^2}\right)$$

$$\left(-\frac{1}{2}ab^2c^3\right)^3 : \left(-\frac{3}{2}ab^3c^2\right)^2 = \left(-\frac{1}{8}a^3b^6c^9\right) : \left(+\frac{9}{4}a^2b^6c^4\right) = -\frac{1}{18}ac^5$$

**Soluzioni esercizi riassuntivi**

$$\begin{aligned} & (x^3y^2 - 7x^3y^2 + 3x^3y^2) \div (5x^2y - 2x^2y) = \\ & = (-3x^3y^2) \div (3x^2y) = \\ & = (-3) \cdot \left(\frac{1}{3}\right) x^{3-2} y^{2-1} = -xy \end{aligned}$$

$$\begin{aligned} & \left[ \frac{1}{2} a^6 b^2 \cdot \left(-\frac{1}{2} ab^2\right) + \frac{1}{4} a^4 b^2 \cdot \frac{2}{3} a^3 b^2 - 2a^7 b^4 \right] : \left(-\frac{5}{2} a^2 b^3\right) = \\ & = \left[ -\frac{1}{4} a^7 b^4 + \frac{1}{6} a^7 b^4 - 2a^7 b^4 \right] : \left(-\frac{5}{2} a^2 b^3\right) = \\ & = \left[ \frac{-3+2-24}{12} a^7 b^4 \right] : \left(-\frac{5}{2} a^2 b^3\right) = \\ & = \left[ -\frac{25}{12} a^7 b^4 \right] : \left(-\frac{5}{2} a^2 b^3\right) = \\ & = \left[ -\frac{25}{12} \right] \cdot \left(-\frac{2}{5}\right) a^{7-2} b^{4-3} = +\frac{5}{6} a^5 b \end{aligned}$$

$$\begin{aligned} & \left(-\frac{3}{4} a^2 bc^3\right) \cdot \left(+\frac{10}{9} abc^2\right) - \left(\frac{5}{8} a^3 c\right) \cdot \left(\frac{2}{5} b^2 c^4\right) = \\ & \left(-\frac{3}{4} a^2 bc^3\right) \cdot \left(+\frac{10}{9} abc^2\right) - \left(\frac{5}{8} a^3 c\right) \cdot \left(\frac{2}{5} b^2 c^4\right) = \\ & = -\frac{5}{6} a^3 b^2 c^5 - \frac{1}{4} a^3 b^2 c^5 = \frac{-10-3}{12} a^3 b^2 c^5 = -\frac{13}{12} a^3 b^2 c^5 \end{aligned}$$

$$\begin{aligned} & 12x^3y^2 : (-4xy^2) - 2xy \cdot (-3xy^3) + (15x^2y) : (3y) - 6x^2y^4 = \\ & = 12x^3y^2 : (-4xy^2) - 2xy \cdot (-3xy^3) + (15x^2y) : (3y) - 6x^2y^4 = \\ & = -3x^2 + 6x^2y^4 + 5x^2 - 6x^2y^4 = \\ & = -3x^2 + 5x^2 + 6^2y^4 - 6x^2y^4 = \\ & = 2x^2 \end{aligned}$$

$$\begin{aligned} & 2x^4 : \left(-\frac{2}{3} x^3\right) + \frac{4}{3} x^3 y^2 : \left(-\frac{1}{3} xy\right)^2 + (-2xy)^2 : (xy^2) = \\ & = 2x^4 \cdot \left(-\frac{3}{2} x^{-3}\right) + \frac{4}{3} x^3 y^2 : \left(\frac{1}{9} x^2 y^2\right) + (4x^2 y^2) : (xy^2) = \\ & = -3x + \frac{4}{3} x^3 y^2 \cdot \left(\frac{9}{1} x^{-2} y^{-2}\right) + 4x = \\ & = -3x + 12x + 4x = \\ & = (-3 + 12 + 4)x = 13x \end{aligned}$$



$$\begin{aligned}
& \left[ ab \cdot \left( \frac{1}{2} a^2 b^3 c^2 \right)^2 \right]^3 : \left[ -a \cdot \left( -\frac{1}{2} ab^2 c \right)^2 \right]^5 + \frac{4}{3} a^2 bc^6 m^4 : \left( -\frac{1}{3} a^2 c^4 m^4 \right) = \\
& = \left[ ab \cdot \left( \frac{1}{4} a^4 b^6 c^4 \right) \right]^3 : \left[ -a \cdot \left( \frac{1}{4} a^2 b^4 c^2 \right) \right]^5 + \frac{4}{3} a^2 bc^6 m^4 \cdot \left( -\frac{3}{1} a^{-2} c^{-4} m^{-4} \right) = \\
& = \left[ \frac{1}{4} a^5 b^7 c^4 \right]^3 : \left[ -\frac{1}{4} a^3 b^4 c^2 \right]^5 - 4bc^2 = \\
& = \left( \frac{1}{4} \right)^{3-5} \cdot [a^{15} b^{21} c^{12}] : [-a^{15} b^{20} c^{10}] - 4bc^2 = \\
& = \left( \frac{1}{4} \right)^{-2} \cdot [-bc^2] - 4bc^2 = \\
& = -16bc^2 - 4bc^2 = -20bc^2
\end{aligned}$$

$$\begin{aligned}
& \left[ \left( -\frac{1}{3} x^2 y^3 z^4 \right)^6 \div \left( -\frac{1}{3} x^2 y^3 z^4 \right)^2 \right]^3 \div \left[ \left( -\frac{1}{3} x^2 y^3 z^4 \right)^2 \cdot \left( -\frac{1}{3} x^2 y^3 z^4 \right)^3 \right]^2 - \frac{1}{3} x^4 y^6 z^8 = \\
& = \left[ \left( -\frac{1}{3} x^2 y^3 z^4 \right)^{6-2} \right]^3 \div \left[ \left( -\frac{1}{3} x^2 y^3 z^4 \right)^{2+3} \right]^2 - \frac{1}{3} x^4 y^6 z^8 = \\
& = \left[ \left( -\frac{1}{3} x^2 y^3 z^4 \right)^4 \right]^3 \div \left[ \left( -\frac{1}{3} x^2 y^3 z^4 \right)^5 \right]^2 - \frac{1}{3} x^4 y^6 z^8 = \\
& = \left( -\frac{1}{3} x^2 y^3 z^4 \right)^{12} \div \left( -\frac{1}{3} x^2 y^3 z^4 \right)^{10} - \frac{1}{3} x^4 y^6 z^8 = \\
& = \left( -\frac{1}{3} x^2 y^3 z^4 \right)^2 - \frac{1}{3} x^4 y^6 z^8 = \\
& = \frac{1}{9} x^4 y^6 z^8 - \frac{1}{3} x^4 y^6 z^8 = \frac{1-3}{9} x^4 y^6 z^8 = -\frac{2}{9} x^4 y^6 z^8
\end{aligned}$$

$$\begin{aligned}
& \left\{ \left( -\frac{3}{4}xy^2 \right)^5 : \left[ -\frac{3}{4}x^3y^3 : x^2y \right]^2 \right\}^3 : \left( -\frac{3}{4}xy^2 \right)^6 = \\
& = \left\{ \left( -\frac{3}{4}xy^2 \right)^5 : \left[ -\frac{3}{4}x^{3-2}y^{3-1} \right]^2 \right\}^3 : \left( -\frac{3}{4}xy^2 \right)^6 = \\
& = \left\{ \left( -\frac{3}{4}xy^2 \right)^5 : \left[ -\frac{3}{4}xy^2 \right]^2 \right\}^3 : \left( -\frac{3}{4}xy^2 \right)^6 = \\
& = \left\{ \left( -\frac{3}{4}xy^2 \right)^{5-3} \right\}^3 : \left( -\frac{3}{4}xy^2 \right)^6 = \\
& = \left\{ \left( -\frac{3}{4}xy^2 \right)^2 \right\}^3 : \left( -\frac{3}{4}xy^2 \right)^6 = \left( -\frac{3}{4}xy^2 \right)^6 : \left( -\frac{3}{4}xy^2 \right)^6 = \left( -\frac{3}{4}xy^2 \right)^{6-6} = 1
\end{aligned}$$


$$\begin{aligned}
& \left\{ -y^2 - \left[ \frac{1}{2}x^2 - \left( \frac{3}{4}x^2 - 4y^2 + xy \right) - \left( \frac{3}{2}xy - \frac{2}{3}x^2 \right) \right] \right\} \cdot \frac{3}{5} = \\
& = \left\{ -y^2 - \left[ \frac{1}{2}x^2 - \frac{3}{4}x^2 + 4y^2 - xy - \frac{3}{2}xy + \frac{2}{3}x^2 \right] \right\} \cdot \frac{3}{5} = \\
& = \left\{ -y^2 - \left[ \frac{6-9+8}{12}x^2 + \frac{-2-3}{2}xy + 4y^2 \right] \right\} \cdot \frac{3}{5} = \\
& = \left\{ -y^2 - \left[ \frac{5}{12}x^2 - \frac{5}{2}xy + 4y^2 \right] \right\} \cdot \frac{3}{5} = \\
& = \left\{ -y^2 - \frac{5}{12}x^2 + \frac{5}{2}xy - 4y^2 \right\} \cdot \frac{3}{5} = \\
& = \left\{ -\frac{5}{12}x^2 + \frac{5}{2}xy - 5y^2 \right\} \cdot \frac{3}{5} = \\
& = -\frac{1}{4}x^2 + \frac{3}{2}xy - 3y^2
\end{aligned}$$



## Sitografia utilizzata per alcuni esercizi


[stringher.blog.kataweb.it/](http://stringher.blog.kataweb.it/)

E-learning IPSSCART B. Stringher – Udine

## KEYWORDS

 *Algebra, calcolo letterale, monomio, polinomio, binomio, trinomio, prodotti notevoli, esercizi con soluzioni*


  *Algebra, Monomial, Polynomial, binomial, trinomial, perfect square trinomials, algebraic factoring, exercises with solution*

 *Algebra, Polinomio, monomio, binomio, trinomio, Igualdades notables, operaciones con polinomios,*

 *Algèbre, Polynôme, Monôme, Polynômes remarquables*

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 *Algebra, Polynom, Binom*