

Rechnen mit Termen

1. Vereinfache so weit wie möglich

$$\text{a) } -3a^3 + 6a^3 - 6a^2 - 3a^2 + 4a - 5a = 3a^3 - 9a^2 - a$$

$$\text{b) } -7xy + 3x - 7y - 2xy - 7x + y = -9xy - 4x - 6y$$

$$\begin{aligned} \text{c) } 10ab : (-4a) - (-2a) \cdot (-3) + 4 \cdot 2b + ab : (-2b) &= -2,5b - 6a + 8b + (-0,5a) = \\ &= -5,5b - 6,5a \end{aligned}$$

$$\begin{aligned} \text{d) } (-2a^2)^3 + 2a^2 \cdot (-2a^4) - (-2a)^2 \cdot (2a)^4 + 2a^6 - 2a^3 : (-a)^3 &= \\ &= -8a^6 + (-4a^6) - 4a^2 \cdot 16a^4 + 2a^6 - 2a^3 : (-a^3) = \\ &= -8a^6 - 4a^6 - 64a^6 + 2a^6 - (-2) = -74a^6 + 2 \end{aligned}$$

2. Vereinfache so weit wie möglich

$$\text{a) } (a^2 - 2ab) - (4a^2 + 5ab) = a^2 - 2ab - 4a^2 - 5ab = -3a^2 - 7ab$$

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

$$\text{c) } (-2x)^3 - (4x^3 + 4) + (6x^3 - 2) = -8x^3 - 4x^3 - 4 + 6x^3 - 2 = -6x^3 - 6$$

$$\begin{aligned} \text{d) } (-6x^2y^3) : (-4xy^2) - [(6xy - 3x) - (8xy + 5x)] &= 1,5xy - [6xy - 3x - 8xy - 5x] = \\ &= 1,5xy - [-2xy - 8x] = 1,5xy + 2xy + 8x = 3,5xy + 8x \end{aligned}$$

$$\text{e) } \left(-\frac{1}{2}a + \frac{1}{4}b\right) - \left(-\frac{1}{4}a + \frac{1}{8}b\right) = -\frac{1}{2}a + \frac{1}{4}b + \frac{1}{4}a - \frac{1}{8}b = -\frac{1}{4}a + \frac{1}{8}b$$

$$\begin{aligned} \text{f) } 0,5x \cdot (-0,2) - (-0,1x + y : 2) + 0,2y &= -0,1x - (-0,1x + 0,5y) + 0,2y = \\ &= -0,1x + 0,1x - 0,5y + 0,2y = -0,3y \end{aligned}$$

$$\begin{aligned} \text{g) } [(-2x)^4 - (-3y)^3] + [2x \cdot (-3x^3) - 3y^3] &= [16x^4 - (-27y^3)] + [-6x^4 - 3y^3] = \\ &= [16x^4 + 27y^3] + [-6x^4 - 3y^3] = 16x^4 + 27y^3 - 6x^4 - 3y^3 = 10x^4 + 24y^3 \end{aligned}$$

$$\begin{aligned} \text{h) } \left(-\frac{a}{4} - \frac{b}{2}\right) - \left(\frac{a}{2} + \frac{b}{3}\right) &= -\frac{1}{4}a - \frac{1}{2}b - \frac{1}{2}a - \frac{1}{3}b = -\frac{1}{4}a - \frac{1}{2}a - \frac{1}{2}b - \frac{1}{3}b = \\ &= -\left(\frac{1}{4}a + \frac{1}{2}a\right) - \left(\frac{1}{2}b + \frac{1}{3}b\right) = -\frac{3}{4}a - \frac{5}{6}b \end{aligned}$$
