

Plus- und Minus-Klammern

1) a) $4a - 4b$

b) $4a + 2b$

c) $8a + 4b$

d) $-4x - 8y$

e) $-5x + 5y$

f) y

g) $5x - 4y$

h) $6x$

i) $-4x + 10y$

2 a) $2x^2 - (2x - (4x^2 - x + 1) + 2x) - 1 =$

$$= 2x^2 - (2\tilde{x} - 4x^2 + \tilde{x} - 1 + 2\tilde{x}) - 1$$

$$= 2x^2 - (-4x^2 + 5x - 1) - 1 = \underline{6x^2 - 5x}$$

2b) $-(4x + 3x^2) + (2x^2 - (5x - 3x^2) - 4x^2)$

$$= -4\hat{x} - 3\tilde{x}^2 + 2\tilde{x}^2 - 5\hat{x} + 3\tilde{x}^2 - 4\tilde{x}^2 = \underline{-2x^2 - 9x}$$

2c) $-3x^2y^2 + 2xy^2 - (-2(xy)^2 + 5xy^2) =$

$$= -3\tilde{x}^2\hat{y}^2 + 2\hat{x}\hat{y}^2 + 2x^2\tilde{y}^2 - 5\hat{x}\hat{y}^2 = \underline{-x^2y^2 - 3xy^2}$$

2d) $3x^2y + (-5x^2y^2 - (4x^2y + 3xy \cdot (-3x) + x^2y)) =$

$$= 3\tilde{x}^2\hat{y} + (-5x^2y^2 - 4\tilde{x}^2\hat{y} + 9\tilde{x}^2\hat{y} - x^2\tilde{y}) = 7x^2y - 5x^2y^2$$

2e) $4x^4y^6 + 2(x^2y^4)^2 - [-(-6x^2y^{12}) : (3x^{-2}y^4) + (2x^2y^3)^2] - 4 \cdot (2x^2y^3)^2$

$$= 4x^4y^6 + 2x^4y^8 - [2x^4y^8 + 4x^4y^6] - 4 \cdot (\frac{1}{4}x^4y^6) =$$

$$= 4x^4y^6 + 2x^4y^8 - 2x^4y^8 - 4x^4y^6 - x^4y^6 =$$

$$= \underline{-x^4y^6}$$

2f) $-5a^3b^2 - [-(-a^2) \cdot (b^2)^3 \cdot (-a) + 6a^3b^2] - (-a)^3 \cdot (-b)^6 =$

$$= -5a^3b^2 - [-a^2b^6 + 6a^3b^2] + a^3b^6 =$$

$$= -5a^3b^2 + a^2b^6 - 6a^3b^2 + a^3b^6 =$$

$$= \underline{-11a^3b^2 + a^2b^6 + a^3b^6}$$

Faktor vor der Klammer

$$\begin{aligned} 3) \quad & 15(a+b-3) - 6(3a-2b) + 7(4-3b) - 8(5-2a) = \\ & = 15\hat{a} + 15\hat{b} - 45 - 18\hat{a} + 12\hat{b} + 28 - 21\hat{b} - 40 + 16\hat{a} = \\ & = \underline{13a + 6b - 57} \end{aligned}$$

$$4a) \quad a(a-2b) - b(2a-b) = a^2 - 2ab - 2ab + b^2 = \underline{a^2 - 4ab + b^2}$$

$$b) \quad a(2a+3b) - b(2a+5b) = 2a^2 + 3ab - 2ab - 5b^2 = \underline{2a^2 + ab - 5b^2}$$

$$\begin{aligned} 5) \quad & x(x-1) - 3x^2 + 4x(2x+1) - 6(3x+2) = \\ & = x^2 - x - 3x^2 + 8x^2 + 4x - 18x - 12 = \underline{6x^2 - 15x - 12} \end{aligned}$$

⋮

$$\begin{aligned} 13) \quad & 2x(1 - x(3 - 5x + 2x^2) - x^2(2 - 3x)) - 4x^2(2x - 2) = \\ & = 2x(1 - 3x + 5x^2 - 2x^3 - 2x^2 + 3x^3) - 8x^3 + 8x^2 = \\ & = 2x(x^3 + 3x^2 - 3x + 1) - 8x^3 + 8x^2 = \\ & = 2x^4 + 6x^3 - 6x^2 + 2x - 8x^3 + 8x^2 = \underline{2x^4 - 2x^3 + 2x^2 + 2x} \end{aligned}$$

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$$\begin{aligned} 30) \quad & 3x^2y^2(yx^{-6} + 2xy^{-1}) - 2xy^{-1}[(2x^{-1}y)^{-2} - 2xy^3] = \\ & = 3x^{-4}y^3 + 6x^3y - 2xy^{-1}\left[\frac{1}{4}x^2y^{-2} - 2xy^3\right] = \\ & = 3x^{-4}y^3 + 6x^3y - \frac{1}{2}x^3y^{-3} + 4x^2y^2 = \\ & = \underline{\frac{3y^3}{x^4} + 6x^3y - \frac{x^2}{2y^3} + 4x^2y^2} = \dots \end{aligned}$$

$$\begin{aligned} 31) \quad & a^4b^4[a^{-3}b^2 - (a^{-2}b^3)^{-2}] + 8a^3b^{-2} : (2a^{-4}) = \\ & = ab^6 - a^8b^{-2} + 8a^3b^{-2} \cdot \frac{1}{2}a^4 = \\ & = ab^6 - \frac{a^8}{b} + 4a^7b^{-2} = \underline{ab^6 - \frac{a^8}{b} + \frac{4a^7}{b^2}} \end{aligned}$$