

## Einfache Termumformungen

### Aufgabe 4

$$\begin{aligned} \text{a)} \quad (3a - 4b)(3a + 4b) &= & \text{f)} \quad (4c - 5d)(4c + 5d) &= \\ &= \underline{9a^2 - 16b^2} & &= \underline{16c^2 - 25d^2} \end{aligned}$$

$$\begin{aligned} \text{c)} \quad (2m + 3n)(2m - 3n) &= & \text{d)} \quad (a + 2b)(a - 2b) &= \\ &= \underline{4m^2 - 9n^2} & &= \underline{a^2 - 4b^2} \end{aligned}$$

$$\begin{aligned} \text{e)} \quad (a - b)(a^2 - b^2) &= & \text{f)} \quad (2a - b)^2 + (a + b)^2 - (2a - b)(2a + b) &= \\ &= \underline{a^3 - 2ab^2 + b^3} & &= \underline{a^2 - 2ab + b^2} \end{aligned}$$

$$\begin{aligned} \text{g)} \quad (x - y)^2 + (x + 2y)^2 - (x - 3y)(x + 3y) &= \\ &= \underline{[2x^2 + 2xy + 5y^2] - (x^2 + 9y^2)} = \\ &= \underline{x^2 + 2xy - 4y^2} \end{aligned}$$

$$\begin{aligned} \text{h)} \quad -5(a + b)^2 + 10ab &= & \text{i)} \quad (x + y)^2 - (x - y)^2 - 4xy &= \\ &= \underline{-5a^2 - 5b^2} & &= \underline{0} \end{aligned}$$

$$\begin{aligned} \text{j)} \quad (a + b)^2 - (a - b)^2 &= & \text{k)} \quad 3(x - 2)(x + 2)(x + 3) &= \\ &= \underline{4ab} & &= \underline{3x^3 + 6x - 36} \end{aligned}$$

$$\begin{aligned} \text{l)} \quad -4(a + 3)(a + 1)(a - 3) &= & \text{m)} \quad (3v - 4)^2 \cdot (v + 1) &= \\ &= \underline{-4a^3 - 4a^2 + 28a + 28} & &= \underline{9v^3 - 15v^2 - 8v + 16} \end{aligned}$$

$$\begin{aligned} \text{n)} \quad (4m - 1)^2 (3m + 1) &= \\ &= \underline{64m^3 - 48m^2 + 12m - 1} \end{aligned}$$

### Aufgabe 5:

$$a) 3st - 4s^2 + s = s(3t - 4s + 1)$$

$$b) ax^2 + bx + cx = x(ax + b + c)$$

$$c) 4x^2 - 8x + x = x(4x - 8 + 1)$$

$$d) 12xy^2 - 4xy + 8x^2y = 4xy(3y - 1 + 2x)$$

$$e) 4x^3 - 12x^2 = 4x^2(x - 3)$$

$$f) 25x^4 - 5x^3 + 125x^2 = 5x^2(5x^2 - x + 25)$$

$$g) k^2x^2 + 3k^2x = k^2x(x + 3)$$

$$h) k^2x^2 + 3k^2x + k = k(kx^2 + 3kx + 1)$$

### Aufgabe 6

$$a) \frac{1}{2}x^3 - 5x^2 = \frac{1}{2}x^2(x - 10)$$

$$b) \frac{1}{2}x^4 - \frac{1}{4}x^6 = \frac{1}{2}x^4(1 - \frac{1}{2}x^2)$$

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

$$d) -\frac{1}{2}x^3 + 4x^2 - x = -\frac{1}{2}x(x^2 - 8x + 2)$$

$$e) \frac{1}{2}x^3 - x^2 = -\frac{1}{2}x^2(-x + 2)$$

$$f) x^3 - x^2 = -x^2(-x + 1)$$

$$g) 3x^3 - 4x^2 = 3x^2(x - \frac{4}{3})$$

$$h) 3x^3 - 4x^2 = -3x^2(-x + \frac{4}{3})$$

$$i) 3x^3 - 4x^2 = -3x^2(-\frac{1}{3}x + \frac{4}{3})$$

$$j) \frac{1}{2}kx^4 + \frac{1}{4}kx^6 = \frac{1}{4}kx^4(2 + x^2)$$

$$k) 3x^3 - 4x^6 = -4x^3(-\frac{3}{4} + x^3)$$

$$l) k^2x^2 + 4kx = \frac{1}{2}kx(2kx + 8)$$