

3. Faktorisieren (ausklammern) von Termen

$$a) \quad 2x^2 + 4x^3 + 2x = \boxed{2x} \cdot x + 2 \cdot \boxed{2x} x \cdot x + \boxed{2x} = 2x(x + 2x^2 + 1)$$

$$b) \quad \underline{a} \cdot \underline{b} + \underline{a} \cdot \underline{b} \cdot \underline{c} + \underline{a} \cdot \underline{2} \cdot \underline{b} = a \cdot b(1 + c + 2) \\ = a \cdot b(3 + c)$$

$$c) \quad \underline{e^x} \cdot \underline{c} \cdot \underline{\sqrt{2}} + \frac{1}{2} \underline{e^x} - \underline{e^x} \cdot \frac{1}{2} = e^x(c \cdot \sqrt{2} + \frac{1}{2} - \frac{1}{2})$$

$$d) \quad \underline{2} \underline{\square} \underline{0} \underline{\Delta} + \underline{\square} \underline{2} \underline{\Delta} \underline{3} \underline{0} - 4 \underline{\square} \underline{3} \underline{0} \underline{8} \underline{\Delta} = \\ \underline{2} \underline{\square} \underline{0} \underline{\Delta} + \underline{\square} \underline{2} \underline{\Delta} \underline{3} \underline{0} - 2 \cdot \underline{2} \underline{\square} \underline{3} \underline{0} \cdot 2 \cdot 2 \cdot \underline{2} \underline{\Delta} \\ = \square 0 \Delta \cdot 2(1 + 3 - 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2) \\ = \square 0 \Delta \cdot 2(4 - 48) \\ = \square 0 \Delta \cdot 2 \cdot (-44) = \square 0 \Delta (-88)$$

4. Binomische Formeln

$$(a+b)^2 = (a+b)(a+b) = a^2 + 2ab + b^2$$

$$(a-b)^2 = (a-b)(a-b) = a^2 - 2ab + b^2$$

$$(a+b)(a-b) = a^2 - b^2$$

$$a) \quad 9 - 6x + x^2 = 3 \cdot 3 - 2 \cdot 3 \cdot x + x^2 = \overset{a^2}{3^2} - 2 \cdot 3 \cdot x + \overset{b^2}{x^2} = \overset{a^2 - 2ab + b^2}{(3-x)^2}$$

$$b) \quad 16 - z^4 = \boxed{2 \cdot 2 \cdot 2 \cdot 2} - \boxed{z \cdot z \cdot z \cdot z} = \overset{a^2}{4^2} - \overset{b^2}{(z^2)^2} = (4+z^2)(4-z^2)$$

$4 \cdot 4 - z^2 \cdot z^2$

$$c) \quad 25 - 10k + k^2 =$$
$$5^2 - 2 \cdot 5k + k^2 = (5-k)(5-k) = (5-k)^2$$
$$a^2 - 2 \cdot ab + b^2 = (a-b)(a-b) = (a-b)^2$$

$$4x^2 + 12x + 9 =$$

$$\underbrace{2 \cdot 2 \cdot x \cdot x}_{(2x) \cdot (2x)} + \overset{2}{2} \cdot \overset{a}{2} \cdot \overset{b}{3} x + 3 \cdot 3 = \overset{a^2}{(2x)^2} + \overset{2 \cdot ab}{2 \cdot 2x \cdot 3} + \overset{b^2}{3^2}$$

$$a^2 + 2ab + b^2$$

$$x \cdot x = x^2$$

$$\textcircled{2} \cdot \textcircled{2} \cdot \textcircled{3}$$

$$3 = b$$

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