

S. 123)

G 10 b Lösungen S. 123 / 125

$$24) a) 2,7 \cdot 10^8 + 8,9 \cdot 10^8 = (2,7 + 8,9) \cdot 10^8 = 11,6 \cdot 10^8$$

$$24 \cdot 10^{-7} - 5 \cdot 10^{-7} = 19 \cdot 10^{-7}$$

$$b) 6 \cdot 10^{11} + 3 \cdot 10^{12} = 0,6 \cdot 10^{12} + 3 \cdot 10^{12} = 3,6 \cdot 10^{12}$$

$$7 \cdot 10^{-5} - 9 \cdot 10^{-6} = 70 \cdot 10^{-6} - 9 \cdot 10^{-6} = 61 \cdot 10^{-6}$$

$$c) (3,5 \cdot 10^{-8}) \cdot (2 \cdot 10^8) = 7 \cdot 10^{-5}$$

$$\frac{4,2 \cdot 10^{-7}}{7 \cdot 10^3} = 0,6 \cdot 10^{-10}$$

$$S. 125) a) x^4 \cdot y^4 = (xy)^4 \quad b) x^{-4} \cdot y^{-4} = (x \cdot y)^{-4} \left(\frac{1}{(xy)^4} \right)$$

$$3) c) a^{-3} \cdot \left(\frac{1}{a} \right)^{-3} = \left(\frac{a}{a} \right)^{-3} = 1^{-3} = 1 \quad (a \neq 0)$$

$$d) (2x)^3 : x^3 = \left(\frac{2x}{x} \right)^3 = 2^3$$

$$e) \frac{(ab)^{-2}}{b^{-2}} = (ab : b)^{-2} = a^{-2} \quad (b \neq 0)$$

$$4) a) (2x)^3 = 2^3 \cdot x^3 = 8x^3$$

$$b) \left(\frac{2x}{3y} \right)^4 = \frac{(2x)^4}{(3y)^4} = \frac{2^4 x^4}{3^4 y^4} = \frac{16x^4}{81y^4} \quad (y \neq 0)$$

$$c) (3a \cdot 2b)^5 = (3a)^5 \cdot (2b)^5 = 3^5 a^5 \cdot 2^5 b^5 = 6^5 a^5 b^5$$

$$d) \left(\frac{-8xy}{5z} \right)^2 = \frac{(-8xy)^2}{(5z)^2} = \frac{(-8)^2 x^2 y^2}{5^2 z^2} = \frac{64x^2 y^2}{25z^2} \quad (z \neq 0)$$

$$e) (10x)^{-3} = 10^{-3} \cdot x^{-3} = \frac{1}{10^3 x^3}$$

$$f) \left(\frac{\sqrt{10}}{b^3} \right)^{-2} = \frac{\sqrt{10}^{-2}}{(b^3)^{-2}} = \frac{10^{-1}}{b^{-6}} = \frac{b^6}{10} \quad (b \neq 0)$$