

Aufgaben zur Potenzrechnung

1.0 Berechnen Sie.

1.1 $(-3)^2 \cdot (-3)^3$ ☐ 1.2 $27 \cdot 3^2$ ☒ 1.3 $(-a)^3 \cdot a^5$ ☒ 1.4 $(-3x^3) \cdot (-2x^2)$ ☒

1.5 $4^3 \cdot 4^0 \cdot 4^4$ ☐ 1.6 $(-6y^2) \cdot \frac{2}{3}y^4$ ☐ 1.7 $3a \cdot (-a)^2 \cdot a^5$ 1.8 $7 \cdot (-y)^7 \cdot \frac{1}{7}y$ ☒

2.0 Berechnen Sie.

2.1 $\frac{(-1)^{12}}{(-1)^{13}}$ ☐ 2.2 $\frac{x^7}{x^5}$ ☐ 2.3 $\frac{a^7}{(-a)^4}$ ☒ 2.4 $\frac{w^{q+1}}{w^{q+2}}$ ☐

2.5 $\frac{c^{n+3}}{c^3}$ ☐ 2.6 $\frac{b^{m+3}}{b^{m+1}}$ ☐ 2.7 $\frac{a^{n+1}}{a}$ ☒ 2.8 $\frac{3e^{3k+2}}{5e^{k+1}}$ ☒

3.0 Berechnen Sie.

3.1 $(-a)^3 \cdot (-b)^3$ ☐ 3.2 $(x+1)^5 \cdot (x-1)^5$ ☐ 3.3 $(-u)^{3m+2} \cdot v^{3m+2}$ ☐

3.4 $(8u)^3 \cdot (0,25v)^3$ ☐ 3.5 $(-4r)^{2n} \cdot s^{2n}$ ☐ 3.6 $(3x+4y)^{3+4n} \cdot (4y-3x)^{3+4n}$ ☐

3.7 $\frac{(5a)^7}{(10a)^7}$ ☒ 3.8 $\frac{(2a^2b)^{1+4m}}{(-3ab^2)^{1+4m}}$ ☒ 3.9 $\frac{(15x^2-6x)^{3n}}{(5x-2)^{3n}}$ ☒

4.0 Berechnen Sie.

4.1 $(x^{2k})^4$ ☐ 4.2 $(b^m)^{m+2}$ ☐ 4.3 $(-x^5)^{2m}$ ☐

4.4 $(a^2b^3)^4$ ☒ 4.5 $(z^{m+1})^5$ ☐ 4.6 $(u^{n+m})^{n-m}$ ☐

4.7 $(-2a^2)^3$ ☒ 4.8 $(\frac{1}{3}a^2bc^3)^3$ ☒ 4.9 $(-2b^4)^2$ ☒

5.0 Finden und verbessern Sie die Fehler, die sich bei den folgenden Rechnungen eingeschlichen haben. ☒

5.1 $a^3 + a^5 = a^{3+5} = a^8$

5.2 $2b^4 + 4b^2 = (2+4) \cdot b^{4+2} = 6b^6$

5.3 $c^4 \cdot c^2 = c^{4 \cdot 2} = c^8$

5.4 $-5d^4 : 2d^2 = (-5-2)d^{4-2} = -7d^2$

Lösungen

$$1.1 \quad (-3)^5 = -243$$

$$1.2 \quad 3^3 \cdot 3^2 = 3^5 = 243$$

$$1.3 \quad -a^3 \cdot a^5 = -a^8$$

$$1.4 \quad (-3x^3) \cdot (-2x^2) = 6x^5$$

$$1.5 \quad 4^{3+0+4} = 4^7$$

$$1.6 \quad -4y^6$$

$$1.7 \quad 3a \cdot a^2 \cdot a^5 = 3a^8$$

$$1.8 \quad -7y^7 \cdot \frac{1}{7}y = -y^8$$

$$2.1 \quad (-1)^{12-13} = (-1)^{-1} = \frac{1}{(-1)} = -1$$

$$2.2 \quad x^{7-5} = x^2$$

$$2.3 \quad \frac{a^7}{a^4} = a^{7-4} = a^3$$

$$2.4 \quad w^{(q+1)-(q+2)} = w^{-1} = \frac{1}{w}$$

$$2.5 \quad c^{n+3-3} = c^n$$

$$2.6 \quad b^{(m+3)-(m+1)} = b^2$$

$$2.7 \quad a^{n+1-1} = a^n$$

$$2.8 \quad \frac{3e^{3k+2}}{5e^{k+1}} = \frac{3}{5}e^{(3k+2)-(k+1)} = \frac{3}{5}e^{2k+1}$$

$$3.1 \quad (ab)^3$$

$$3.2 \quad [(x+1)(x-1)]^5 = (x^2-1)^5$$

$$3.3 \quad (-uv)^{3m+2}$$

$$3.4 \quad (8u \cdot \frac{1}{4}v)^3 = (2uv)^3$$

$$3.5 \quad (-4rs)^{2n}$$

$$3.6 \quad [(3x+4y)(4y-3x)]^{3+4n} = (16y^2-9x^2)^{3+4n}$$

$$3.7 \quad \left(\frac{1}{2}\right)^7$$

$$3.8 \quad \left(-\frac{2a}{3b}\right)^{1+4m}$$

$$3.9 \quad \left(\frac{3x(5x-2)}{5x-2}\right)^{3n} = (3x)^{3n}$$

$$4.1 \quad x^{8k}$$

$$4.2 \quad b^{m^2+2m}$$

$$4.3 \quad x^{10m}$$

$$4.4 \quad a^8b^{12}$$

$$4.5 \quad z^{5m+5}$$

$$4.6 \quad u^{(n+m)(n-m)} = u^{n^2-m^2}$$

$$4.7 \quad (-2)^3 \cdot (a^2)^3 = -8a^6$$

$$4.8 \quad \left(\frac{1}{3}\right)^3 a^6 b^3 c^9 = \frac{1}{27} a^6 b^3 c^9$$

$$4.9 \quad (-2)^2 \cdot (b^4)^2 = 4b^8$$

$$5.1 \quad a^3 \cdot a^5 = a^{3+5} = a^8$$

$$5.2 \quad 2b^4 \cdot 4b^2 = 8b^{4+2} = 8b^6$$

$$5.3 \quad c^4 \cdot c^2 = c^{4+2} = c^6$$

$$5.4 \quad -5d^4 : 2d^2 = \frac{-5d^4}{2d^2} = -\frac{5}{2}d^2$$