



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.

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

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

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

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



Lösungen

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

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

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

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

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

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

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

$$1.6 -4y^6$$

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

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

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

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

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

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

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

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

$$3.1 (ab)^3$$

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

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

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

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

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

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

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

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

$$4.1 x^{8k}$$

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

$$4.3 x^{10m}$$

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

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

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

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

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

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

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

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

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

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