

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 $(-3)^5 = -243$

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

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

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

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

1.6 $-4y^6$

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

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

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

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

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

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

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

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

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

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

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^8b^{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 $\left(\frac{1}{3}\right)^3 a^6b^3c^9 = \frac{1}{27}a^6b^3c^9$

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