Potenzen

Potenzen mit rationalen Exponenten

Vereinfache und fasse zusammen:

1. $\left[(a-3)^6 b^{12}\right]^{-\frac{1}{6}} =$

2. $2^{1+\sqrt{2}} \cdot 2^{1-\sqrt{2}} =$

3. $\left(x^{\sqrt{3}-1}\right)^{\sqrt{3}+1} =$

4. $\left[(2x-3)^6\right]^{\frac{1}{6}} =$

5. $\dfrac{(2x+1)^{\frac{3}{2}}}{(8x+4)^{\frac{1}{2}}} =$

6. $\left[\left(\dfrac{w}{v^{-\frac{1}{2}}}\right)^{\frac{2}{3}} : \left(v^{1,4} \cdot w^{-4}\right)\right]^{-\frac{5}{4}} =$

7. $\left[\left(x^{-1}\right)^{-\frac{2}{3}} \cdot \left(x^{-1,5}\right) \cdot \left(xy^{-2}\right)^{-\frac{1}{2}}\right]^3 =$

8. $\left(8x^{-1}\sqrt{x^3 y^{-\frac{2}{3}}} - 12y^{-1}\sqrt{x\sqrt[3]{y^4}}\right)xy =$

9. $\dfrac{x^{-\frac{1}{4}}b - x^{-\frac{1}{4}}a}{bx^{-\frac{1}{4}} + \left(4abx^{-\frac{1}{2}}\right)^{\frac{1}{2}} + x^{-\frac{1}{4}}a} =$

10. $\quad \dfrac{a^{-\frac{6}{5}} - b^{-\frac{6}{5}}}{b^{-\frac{3}{5}} - a^{-\frac{3}{5}}} =$

11. $\quad \dfrac{\left(64x^{\frac{3}{8}}y^{-\frac{3}{5}}z^2\right)^{\frac{1}{3}}}{\left(125x^{-\frac{15}{16}}y^{\frac{3}{10}}z^{-1}\right)^{-\frac{2}{3}}} =$

12. $\quad \dfrac{x^{\frac{2}{3}} - x^{\frac{1}{3}}y^{\frac{1}{2}}}{y - x^{\frac{2}{3}}} =$

13. $\quad \dfrac{\left(8x^{-\frac{9}{4}}y^3\right)^{-\frac{2}{3}}}{\left(\frac{1}{16}x^{\frac{2}{3}}y^{-2}\right)^{\frac{3}{4}}} =$

14. $\quad \dfrac{y^{\frac{1}{2}}\left(y^{\frac{1}{2}} - x^{\frac{1}{3}}\right)}{x^{\frac{2}{3}} - y} - \dfrac{x^{\frac{1}{3}}\left(x^{\frac{1}{3}} + y^{\frac{1}{2}}\right)}{y + 2y^{\frac{1}{2}}x^{\frac{1}{3}} + x^{\frac{2}{3}}} =$

15. $\quad \sqrt[3]{\sqrt[5]{ax} \cdot \sqrt{\dfrac{a}{x}}} : \sqrt[15]{\dfrac{x}{a^4}} =$

Lösungen ohne Lösungsweg

1. $\left(a-3\right)^{-1}b^{-2}$

2. 4

3. x^2

4. $2x - 3$

5. $x + 0,5$

6. $w^{-\frac{35}{6}} \cdot v^{\frac{4}{3}}$

7. $x^{-4} \cdot y^3$

8. $-4x^{1,5}y^{\frac{2}{3}}$

9. $\dfrac{b-a}{\left(a^{0,5}+b^{0,5}\right)^2}$

10. $-a^{-\frac{3}{5}} - b^{-\frac{3}{5}}$

11. $100x^{-0,5}$

12. $-\dfrac{x^{\frac{1}{3}}}{x^{\frac{1}{3}}+y^{\frac{1}{2}}}$

13. $2xy^{-0,5}$

14. -1

15. $a^{\frac{1}{2}} \cdot x^{-\frac{1}{6}}$