

Potenzen

Potenzen mit rationalen Exponenten

Vereinfache und fasse zusammen:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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Lösungen ohne Lösungsweg

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

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. $\frac{b-a}{(a^{0,5} + b^{0,5})^2}$

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

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

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

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

14. -1

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