

Potenzgleichungen

Bestimme jeweils die Lösungsmenge:

$$1. \quad 2 - x^{\frac{1}{3}} = 1,25$$

$$2. \quad x^{\frac{5}{2}} = 8^{\frac{10}{3}}$$

$$3. \quad x^{1,5} - 10 = \frac{1}{8}(10^3 + 3x^{1,5})$$

$$4. \quad \left(x^{-\frac{5}{2}} - 7\right)^{-\frac{1}{2}} = 0,2$$

$$5. \quad (\sqrt{3}x)^{\frac{4}{3}} - 33 = -8(\sqrt{3}x)^{\frac{2}{3}}$$

$$6. \quad (x-2)^{\frac{1}{3}} - (x-2)^{\frac{1}{6}} = 6$$

$$7. \quad \left(81x^{-\frac{3}{2}} + 729\right)^{-\frac{1}{2}} = 0,5 \cdot 3^{-3}$$

$$8. \quad 2 = \left(17 - 3\sqrt{5x-1}\right)^{\frac{1}{3}}$$

$$9. \quad x^{\frac{3}{2}} - 25 = \frac{1}{11}(8x^{1,5} + 100)$$

$$10. \quad 30 \cdot \sqrt[6]{(x-3)^5} = \sqrt[3]{(x-3)^5} - 64$$

$$11. \quad \left(4x^{\frac{4}{3}} + 17\right)^{\frac{3}{2}} = 9 \cdot \left(\frac{1}{27}\right)^{-\frac{4}{3}}$$

$$12. \quad 32(3-x)^{-\frac{10}{3}} + 127(3-x)^{-\frac{5}{3}} = 4$$

$$13. \quad \left(4x^{\frac{4}{3}} + 16\right)^{\frac{3}{2}} - 4 \cdot \left(\frac{1}{8}\right)^{-\frac{4}{3}} = 0$$

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Lösungen ohne Lösungsweg

1. $\left\{\frac{27}{64}\right\}$

2. $\{16\}$

3. $\{36\}$

4. $\left\{\frac{1}{4}\right\}$

5. $\{3\}$

6. $\{731\}$

7. $\{3^{-2}\}$

8. $\{2\}$

9. $\{25\}$

10. $\{67\}$

11. $\{8\}$

12. $\{-5\}$

13. $\{0\}$