

Lösungen zu den Potenzgleichungen!

1	$x^2 = 16$	$x = \pm\sqrt{16} \Leftrightarrow x = 4 \vee x = -4$
2	$x^2 = -4$	$x = \pm\sqrt{-4} \Rightarrow$ keine Lösung
3	$x^3 = -27$	$x = -\sqrt[3]{27} = -3$
4	$x^4 = 625$	$x = \pm\sqrt[4]{625} \Leftrightarrow x = 5 \vee x = -5$
5	$\frac{1}{x^4} = 81 \quad x \neq 0$	$1 = 81 \cdot x^4 \Leftrightarrow \frac{1}{81} = x^4 \Leftrightarrow x = \pm\sqrt[4]{81} \Leftrightarrow x = 3 \vee x = -3$
6	$x^5 = \frac{32}{3125}$	$x = \sqrt[5]{\frac{32}{3125}} = \frac{2}{5}$
7	$x^3 = 216 \quad x \neq 0$	$\frac{1}{x^3} = 216 \Leftrightarrow \frac{1}{216} = x^3 \Leftrightarrow x = \frac{1}{6}$
8	$x^6 = -64 \quad x \neq 0$	$\frac{1}{x^6} = -64 \Leftrightarrow \frac{1}{-64} = x^6 \Rightarrow$ keine Lösung
9	$-4x^2 + 6 = -94$	$-4x^2 = -100 \Leftrightarrow x^2 = 25 \Leftrightarrow x = 5 \vee x = -5$
10	$3x^3 - 7 = 11$	$3x^3 = 18 \Leftrightarrow x^3 = 6 \Leftrightarrow x = \sqrt[3]{6} \approx 1,82$
11	$4x^{-4} + 8 = 16$	$4x^{-4} = 8 \Leftrightarrow x^{-4} = 2 \Leftrightarrow \frac{1}{x^4} = 2 \Leftrightarrow \frac{1}{2} = x^4$ $\Leftrightarrow x = \pm\sqrt[4]{\frac{1}{2}} \approx \pm 0,84$
12	$\sqrt[5]{x} = 9$	$x = 9^5 = 59049$
13	$x^{\frac{5}{4}} = 5$	$x^5 = 5^4 \Leftrightarrow x^5 = 625 \Leftrightarrow x = \sqrt[5]{625} \approx 3,62$
14	$x^{\frac{4}{5}} = 7$	$x^4 = 7^5 \Leftrightarrow x^4 = 16807 \Leftrightarrow x = \pm\sqrt[4]{16807} \approx \pm 11,39$
15	$x^{\frac{-4}{3}} = 18$	$x^{-4} = 18^3 \Leftrightarrow \frac{1}{x^4} = 5832 \Leftrightarrow x^4 = \frac{1}{5832}$ $\Leftrightarrow x = \pm\sqrt[4]{\frac{1}{5832}} \approx \pm 0,11$