

Lösungen zu Potenzgleichungen I

1. $L = \{-\frac{4}{3}; 2\}$
2. $L = \{6\}$
3. $L = \{\}$
4. $L = \{\frac{243}{32}\}$
5. $L = \{2\}$
6. $L = \{9\}$
7. $L = \{\sqrt[6]{2}\}$
8. $L = \{60\}$
9. $L = \{7\}$
10. (a) $|x^4| = |a| \implies x^4 = |a| \implies L = \{\pm|a|^{\frac{1}{4}}\}$
(b) $|x^3| = |a| \implies x^3 = \pm|a| \implies L = \{\pm|a|^{\frac{1}{3}}\}$
(c) $(x^4)^3 = a^3 \implies x^4 = a \implies L = \begin{cases} \{\pm a^{\frac{1}{4}}\} & \text{für } a \geq 0 \\ \{\} & \text{für } a < 0 \end{cases}$
11. (a) $L = \begin{cases} \{\} & \text{für } a > 0, \text{ da } 2n \text{ gerade} \\ \{\pm \sqrt[2n]{|a|}\} & \text{für } a \leq 0 \end{cases}$
(b) $L = \left\{-\sqrt[7]{\frac{1}{|a|}}\right\} = \left\{-\frac{1}{\sqrt[7]{-a}}\right\}$
(c) $L = \begin{cases} \left\{\pm \sqrt[n]{\frac{1}{a}}\right\} & \text{für } n \text{ gerade} \\ \left\{\sqrt[n]{\frac{1}{a}}\right\} & \text{für } n \text{ ungerade} \end{cases}$

Zusammengestellt von OStR M. Ziemke für Landrat-Lucas-Gymnasium, Leverkusen