

# Aufgabenblatt zu Logarithmus einer Zahl

Logarithmen

Lösungen

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Level 1 – Grundlagen – Blatt 3

## Lösung A1

- |   |   |
|---|---|
| a) $\log_2(16) = 4$                               | b) $\log_3\left(\frac{1}{81}\right) = -4$       |
| c) $\log_{\sqrt{3}}\left(\frac{1}{81}\right) = 8$ | d) $\log_{0,5}(8) = -3$                         |
| e) $\log_{\sqrt{5}}(125) = 6$                     | f) $\log_{0,75}\left(\frac{81}{256}\right) = 4$ |
| g) $\log_{0,75}\left(\frac{256}{81}\right) = -4$  | h) $\log_7(7^5) = 5$                            |
| i) $\log_2(\sqrt[3]{2}) = \frac{1}{3}$            | j) $\log_6(\sqrt[3]{6^2}) = \frac{2}{3}$        |

## Lösung A2

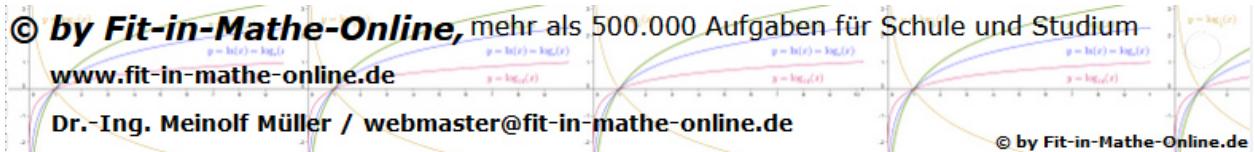
- |  |   |
|--|---|
| a) $\log_a\left(\frac{1}{a^3}\right) = -3$ | b) $\log_{\frac{1}{a}}(a^3) = -3$                     |
| c) $\log_a(\sqrt[n]{a}) = \frac{1}{n}$     | d) $\log_{\frac{1}{a}}(\sqrt[3]{a^2}) = -\frac{2}{3}$ |
| e) $\log_a(a^3) = 3$                       | f) $\log_{\frac{1}{a}}(\sqrt[3]{a^4}) = -\frac{4}{3}$ |
| g) $\log_{\sqrt{a}}(a^2) = 4$              | h) $\log_{\sqrt{a}}\left(\frac{1}{a}\right) = 2$      |
| i) $\log_{\frac{1}{\sqrt{a}}}(a^n) = -2n$  | j) $\log_a(1) = 0$                                    |

## Lösung A3

- |   |   |
|---|---|
| a) $\log_x(64) = 3$<br>$64 = x^3 \rightarrow x = 4$                               | b) $\log_5(x) = 4$<br>$x = 5^4 \rightarrow x = 625$                                     |
| c) $\log_x(a) = -1$<br>$a = x^{-1} \rightarrow x = \frac{1}{a}$                   | d) $\log_{\sqrt{2}}(64) = x$<br>$64 = \sqrt{2}^x \rightarrow x = 12$                    |
| e) $\log_{\sqrt{2}}(x) = 4$<br>$x = \sqrt{2}^4 \rightarrow x = 4$                 | f) $\log_x(\sqrt{a}) = \frac{1}{4}$<br>$\sqrt{a} = x^{\frac{1}{4}} \rightarrow x = a^2$ |
| g) $\log_{\sqrt{a}}(x) = -4$<br>$x = \sqrt{a}^{-4} \rightarrow x = \frac{1}{a^2}$ | h) $5^{\log_5(x)} = 625$<br>$x = 625$   |
| i) $(\sqrt{3})^{\log_3\frac{1}{2}} = x$<br>$x = 1$                                | j) $\log_x(a^n) = 2n$<br>$x = a^{\frac{1}{2}} = \sqrt{a}$                               |

## Lösung A4

- |                              |  |
|------------------------------|--|
| a) $\log_2(25) = 4,6439$     | b) $\log_7(28) = 1,7124$                                 |
| c) $\log_5(0,8) = 0,1386$    | d) $\log_3(128) = 4,4165$                                |
| e) $\log_{0,5}(10) = 0,9266$ | f) $\log_{\sqrt{5}}(0,7) = 1,0291$                       |
| g) $\log_{12}(11) = 0,9650$  | h) $\log_{0,9}(0,4) = 8,6967$                            |
| i) $\log_{1,1}(18) = 30,326$ | j) $\log_{\frac{3}{4}}\left(\frac{7}{8}\right) = 0,4642$ |



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