Logarithms as inverses

6 questions | 14 marks

Equivalent correct methods earn the corresponding marks.

1. Evaluate $\log_2 16$. [2 marks]

$2^4 = 16$.

Answer: 4

2. Evaluate $\log_7 1$. [2 marks]

$7^0 = 1$.

Answer: 0

3. Evaluate $\log_{10} 100000$. [2 marks]

$10^5 = 100000$.

Answer: 5

4. Write $4^{-2} = \frac{1}{16}$ in logarithmic form. [2 marks]

The log output is the exponent -2.

Answer: $\log_4 (\frac{1}{16}) = -2$

5. Give the real domain of $\log_3 (x - 4)$. [3 marks]

The input must be positive: $x - 4 > 0$.

Answer: $x > 4$

6. Explain why $\log_2 0$ is undefined as a real number. [3 marks]

2^x approaches but never reaches zero, so no real exponent gives the required input.

Answer: No real power of 2 is zero.