

Logarithmic Functions: math test solutions, Grade 11

– download the PDF

Test solutions with the detailed point scale. Add up your points and spot what to review.

Suggested time: 45 minutes. Out of 20 points. Calculator allowed only when the problem says so.

1 Conversions and values

/ 4 pts

- a. $\log_5 125 = 3$. (1 pt)
- b. $2^{-4} = \frac{1}{16}$. (1 pt)
- c. $9^{1/2} = 3$, so $\log_9 3 = \frac{1}{2}$. (1 pt)
- d. $7 + 3 = 10$. (1 pt)

2 Properties of logarithms

/ 3 pts

- a. $\log_3 27 + 2 \log_3 x - \log_3 y = 3 + 2 \log_3 x - \log_3 y$. (2 pts)
- b. $\ln 8 + \ln 5 - \ln 10 = \ln \frac{40}{10} = \ln 4$. (1 pt)

3 Exponential equations

/ 3 pts

- a. $216 = 6^3$, so $x - 2 = 3$ and $x = 5$. (1 pt)
- b. $5^x = 20$ (1 pt), so $x = \frac{\ln 20}{\ln 5} \approx 1.861$. (1 pt)

4 Logarithmic equations

/ 4 pts

- a. $3x - 2 = 4^3 = 64$ (1 pt), so $x = 22$. (1 pt)
- b. $x(x + 6) = 16$, so $x^2 + 6x - 16 = 0$ (1 pt), i.e. $(x + 8)(x - 2) = 0$. $x = -8$ is rejected since the logs would be undefined; the solution is $x = 2$ (check: $\log_2 2 + \log_2 8 = 1 + 3 = 4$). (1 pt)

5 Reading a graph

/ 3 pts

- a. Domain $x > 1$; vertical asymptote $x = 1$. (1 pt)
- b. A(2, 2), B(4, 3), C(10, 4). Check: $f(4) = \log_3 3 + 2 = 3$ and $f(10) = \log_3 9 + 2 = 4$. (1 pt)
- c. $f(28) = \log_3 27 + 2 = 3 + 2 = 5$. (1 pt)

6 Acidity of solutions

/ 3 pts

- a. $\text{pH} = -\log(0.0025) \approx 2.60$. (1.5 pts)
- b. $[\text{H}^+] = 10^{-8.3} \approx 5.0 \times 10^{-9} \text{ mol/L}$. (1.5 pts)



Test yourself: quick challenge for Grade
11

Change level

Level : Grade 11

6 random questions, instant feedback.

 **Start the challenge**

 Keep exploring with Zyro

 Math tests

Logarithmic Functions: math test, Grade 11

 Math lessons

Logarithmic Functions: math lesson, Grade 11

 Math quizzes

Logarithmic Functions: math quiz, Grade 11

 Math tests

Sequences and Series: math test, Grade 11



Math tests

Functions and Transformations: math test, Grade 11



Math lessons

Sequences and Series: math lesson, Grade 11

Zyro takes you to our partner sites

Blast off to other planets of knowledge and their apps.

Lift off