

Algebra 2 - Logarithms - Quiz

Common Core F-LE.A.4, F-BF.B.5, F-IF.C.7e · maths-pdf.fr/en/

Name: _____ Class: _____ Date: ____/____/____

Answer ten multiple-choice questions on logarithms. Choose one option for each question, then read the explanation to see why the correct choice works and which mistake, such as applying the product rule to a sum, each wrong choice shows.

Algebra 2 · Common Core State Standards: **F-LE.A.4, F-BF.B.5, F-IF.C.7e**

Questions

Question 1

What is $\log_2(8)$?

- A. 3
- B. 4
- C. 16
- D. 2

Question 2

Which is the exponential form of $\log_5(25) = 2$?

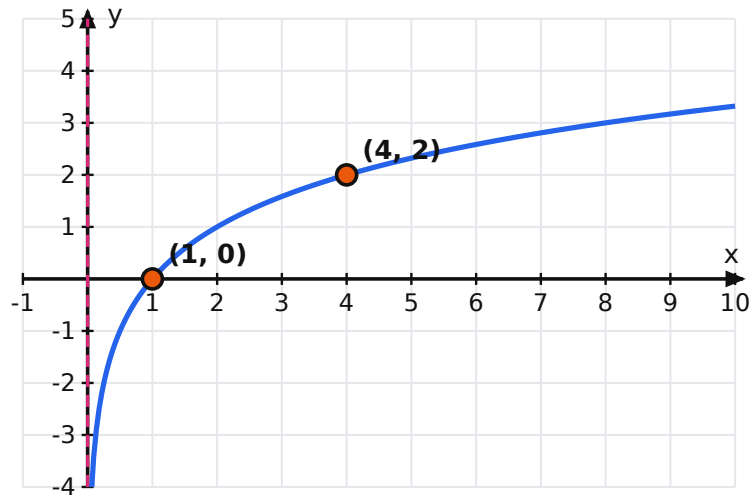
- A. $2^5 = 25$
- B. $5^2 = 25$
- C. $25^2 = 5$
- D. $5^{25} = 2$

Question 3

What is $\log 0.01$?

- A. 2
- B. -2
- C. -0.01
- D. 0.1

Question 4



Graph of a logarithmic function.

What is the vertical asymptote of the graph?

- A. $y=0$
- B. $x=1$
- C. $y=1$
- D. $x=0$

Question 5

Which expression equals $\log 6$?

- A. $\log 2 \cdot \log 3$
- B. $\log 3 - \log 2$
- C. $\log 2 + \log 3$
- D. $2\log 3$

Question 6

Simplify $\log_4(4^7)$.

- A. 7
- B. 4
- C. 28
- D. 1

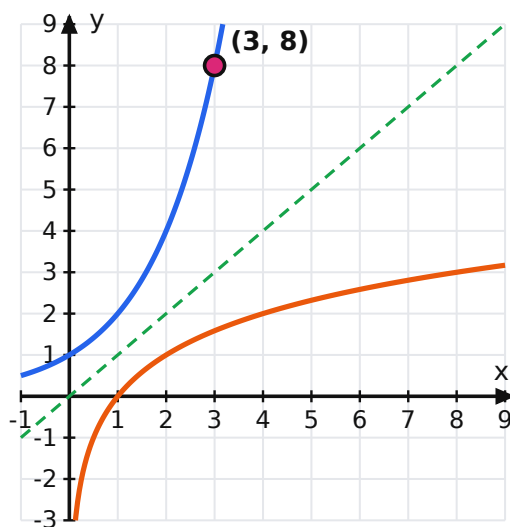
Question 7

Solve $2^x = 32$.

- A. $x=16$
- B. $x=5$
- C. $x=6$

D. $x = 30$

Question 8



Mirror images across $y = x$.

The point $(3, 8)$ is on $y = 2^x$. Which point is on $y = \log_2 x$?

- A. $(3, 8)$
- B. $(-3, 8)$
- C. $(8, 3)$
- D. $(8, -3)$

Question 9

Evaluate $\log_3(20)$ using change of base. Which is closest?

- A. 2.73
- B. 6.67
- C. 0.37
- D. 1.30

Question 10

x	1/4	1	4	16
$\log_4 x$	-1	0	1	2

Values of log base 4.

The table lists values of log base 4. Which statement is correct?

- A. $\log_4(16) = 4$ because $16 \div 4 = 4$
- B. $\log_4(1) = 1$ because $4 \div 4 = 1$
- C. $\log_4(1/4) = 1$ because $1/4$ is 4 inverted
- D. $\log_4(16) = 2$ because $4^2 = 16$

Answers

1. **A** - 2 raised to the 3rd power is 8, so the log base 2 of 8 is 3.
2. **B** - The base 5 is raised to the exponent 2 to give 25.
3. **B** - $0.01 = 10^{-2}$, so the common log is -2.
4. **D** - A logarithm is undefined for $x \leq 0$, and the graph approaches the y-axis, so the asymptote is $x = 0$.
5. **C** - The product rule: $\log(2 \cdot 3) = \log 2 + \log 3$.
6. **A** - A logarithm and its base cancel: $\log_b(b^n) = n$.
7. **B** - $2^5 = 32$, or $x = \log_2 32 = 5$.
8. **C** - Inverse functions swap coordinates, so (8, 3) is on the log graph.
9. **A** - $\ln 20 / \ln 3 = 2.9957 / 1.0986$ is about 2.73.
10. **D** - The log is the exponent: 4 to the 2 is 16. Also $\log_4(1) = 0$ because 4 to the 0 is 1.

Remember

- $\log_b(x) = y$ means $b^y = x$.
- $\log_b(1) = 0$ and $\log_b(b) = 1$.
- Product, quotient, and power rules: $\log(xy) = \log x + \log y$, etc.
- Change of base: $\log_b(x) = \ln x / \ln b$.
- The graph of $\log_b(x)$ is the reflection of b^x over $y = x$, with asymptote $x = 0$.