ALGEBRA 1: QUIZ SOLUTIONS

Question 1

Which one of the following statements is correct?

A. $\log_3 9 = 2$ B. $\log_3 2 = 9$ C. $\log_2 9 = 3$ D. $\log_9 3 = 2$

Solution

For A, if $\log_3 9 = 2$, then $3^2 = 9$, which is true.

For B, if $\log_3 2 = 9$, then $3^9 = 2$, which is false.

For C, if $\log_2 9 = 3$, then $2^3 = 9$, which is false.

For D, if $\log_9 3 = 2$, then $9^2 = 3$, which is false.

So, the correct answer is A.

Question 2

Which one of the following logarithms is defined?

A. $\log_1 3$ B. $\log_3 1$ C. $\log_{10}(-3)$ D. $\log_{-3} 10$

Solution

If $y = \log_b x$, then the log is defined only if $b > 0$, $b \neq 1$ and $x > 0$.

For A, $b = 1$, which is not allowed, so $\log_1 3$ is not defined.

For B, $b = 3$ and $x = 1$, both of which are allowed, so the log is defined.

For C, $x < 0$, which is not allowed, so the log is not defined.

For D, $b < 0$, which is not allowed, so the log is not defined.

So, the correct answer is A.

Question 3

Which one of the following logarithms is not defined?

A. $\log_3 3$ B. $\log_5 \sqrt{5}$ C. $\log_{1/7} 7$ D. $\log_3 0$

Solution

If $y = \log_b x$, then the log is defined only if $b > 0$, $b \neq 1$ and $x > 0$.

For A, $b = 3$, $x = 3$, both allowed, so the log is defined.

For B, $b = 5$, $x = \sqrt{5}$, both allowed, so the log is defined.

For C, $b = \frac{1}{7}$, $x = 7$, both allowed, so the log is defined.

For D, $x = 0$, which is not allowed, so the log is not defined.

So, the correct answer is D.

Question 4

What is $5^x = 18$ in its equivalent logarithmic form?

A. $\log_5 x = 18$ B. $\log_{18} x = 5$ C. $\log_5 18 = x$ D. $\log_{18} 5 = x$

Solution

If $5^x = 18$, then $\log_5 18 = x$.

So, the correct answer is C.

Question 5

What is the value of x if $\log_x 729 = 6$?

A. 2 B. 3 C. 4 D. 5

Solution

$$\log_x 729 = 6$$
$$\therefore x^6 = 729$$
$$= 3^6$$
$$\therefore x = 3$$

So, the correct answer is B.