ALGEBRA 3: QUIZ SOLUTIONS

Question 1

Is the following statement true or false?

$$n\log_{10} x = \log_{10} x^n$$

A. True B. False

Solution

If $y = \log_{10} x^n$, then $\log_{10} y = n\log_{10} x$, which is true.

So, the correct answer is A.

Question 2

If $2^n = 3$, what is the value of n?

A. 0,1761 B. 0,6667 C. 1,5 D. 1,5850

Solution

$$2^n = 3$$
$$\therefore \log 2^n = \log 3$$
$$\therefore n\log 2 = \log 3$$
$$\therefore n = \frac{\log 3}{\log 2} = 1,5850$$

So, the correct answer is D.

Question 3

If $7(2^x) = 39$, what is the value of x?

A. 2,4780 B. 2,0809 C. 1,2674 D. 0,4449

Solution

$$7(2^x) = 39$$
$$\therefore 2^x = 39/7$$
$$\therefore \log 2^x = \log(39/7)$$
$$\therefore x\log 2 = \log(39/7)$$
$$\therefore x = \frac{\log(39/7)}{\log 2} = 2,4780$$

So, the correct answer is A.

Question 4

Express $\log_3 3^7$ in its simplest form.

A. 9 B. 7 C. 6 D. 3

Solution

$$\log_3 3^7 = 7\log_3 3$$
$$= 7, \text{ because } \log_3 3 = 1$$

So, the correct answer is B.

Question 5

What is the value of $\log_2 32 - \log_{10} 1000 + \log_4 16$.

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

5. $$\begin{aligned} \log_2 32 - \log_{10} 1000 + \log_4 16 &= \log_2 2^5 - \log_{10} 10^3 + \log_4 4^2 \\ &= 5\log_2 2 - 3\log_{10} 10 + 2\log_4 4 \qquad [\log_b b = 1] \\ &= 5 - 3 + 2 \\ &= 4 \end{aligned}$$

So, the correct answer is C.