

## General Algebra II Worksheet #4 Unit 12 Selected Solutions

Given:  $\text{Log}_N 2 = a$  ;  $\text{Log}_N 3 = b$  ;  $\text{Log}_N 5 = c$ .

Express each of the following logarithms as an algebraic expression in terms of a, b, and/or c.

2.  $\text{Log}_N 8 = \underline{3a}$

$$\text{Log}_N 2^3 = 3\text{Log}_N 2$$

4.  $\text{Log}_N 12 = \underline{2a + b}$

$$\text{Log}_N (2^2 \cdot 3) = 2\text{Log}_N 2 + \text{Log}_N 3$$

6.  $\text{Log}_N 0.25 = \underline{-2a}$

$$\text{Log}_N (1/2^2) = -2\text{Log}_N 2$$

8.  $\text{Log}_N 0.2 = \underline{-c}$

$$\text{Log}_N (1/5) = -\text{Log}_N 5$$

10.  $\text{Log}_N (7.5) = \underline{b + c - a}$

$$\text{Log}_N (15/2) = \text{Log}_N 3 + \text{Log}_N 5 - \text{Log}_N 2$$

12.  $\text{Log}_N (5N^2) = \underline{c + 2}$

$$\text{Log}_N 5 + 2\text{Log}_N N$$

14.  $\text{Log}_N \sqrt{6} = \underline{\frac{a + b}{2}}$

$$\text{Log}_N 6^{0.5} = 0.5(\text{Log}_N 2 + \text{Log}_N 3)$$

16.  $\text{Log}_N \left(\frac{3}{8}\right) = \underline{b - 3a}$

$$\begin{aligned} \text{Log}_N 3 - \text{Log}_N 8 &= \\ &= \text{Log}_N 3 - 3\text{Log}_N 2 \end{aligned}$$

Evaluate each of the following.

18.  $\text{Log}_5 125 = \underline{3}$

$$125 = 5^3$$

20.  $\text{Log}_{10} 10,000 = \underline{4}$

$$10,000 = 10^4$$

22.  $\text{Log}_5 0.2 = \underline{-1}$

$$0.2 = 1/5 = 5^{-1}$$

24.  $\text{Log}_5 0.04 = \underline{-2}$

$$0.04 = 1/25 = 5^{-2}$$

26.  $\text{Log}_5 \sqrt[3]{25} = \underline{\frac{2}{3}}$

$$\sqrt[3]{25} = \sqrt[3]{5^2} = 5^{\frac{2}{3}}$$