Name_____

The Meaning Of Logarithms

Date_____ Period____

Rewrite each equation in exponential form.

1) $\log_6 36 = 2$

$$6^2 = 36$$

2) $\log_{289} 17 = \dfrac{1}{2}$

$$289^{1/2} = 17$$

3) $\log_{14} \dfrac{1}{196} = -2$

$$14^{-2} = \dfrac{1}{196}$$

4) $\log_3 81 = 4$

$$3^4 = 81$$

Rewrite each equation in logarithmic form.

5) $64^{\frac{1}{2}} = 8$

$$\log_{64} 8 = \dfrac{1}{2}$$

6) $12^2 = 144$

$$\log_{12} 144 = 2$$

7) $9^{-2} = \dfrac{1}{81}$

$$\log_9 \left(\dfrac{1}{81}\right) = -2$$

8) $\left(\dfrac{1}{12}\right)^2 = \dfrac{1}{144}$

$$\log_{(1/12)} \left(\dfrac{1}{144}\right) = 2$$

Rewrite each equation in exponential form.

9) $\log_u \dfrac{15}{16} = v$

$$u^v = \dfrac{15}{16}$$

10) $\log_v u = 4$

$$v^4 = u$$

11) $\log_{\frac{7}{4}} x = y$

$$\left(\dfrac{7}{4}\right)^y = x$$

12) $\log_2 v = u$

$$2^u = v$$

13) $\log_u v = -16$

$$u^{-16} = v$$

14) $\log_y x = -8$

$$y^{-8} = x$$

Rewrite each equation in logarithmic form.

15) $u^{-14} = v$

$$\log_u v = -14$$

16) $8^b = a$

$$\log_8 a = b$$

17) $\left(\frac{1}{5}\right)^x = y$

$\log_{(1/5)} y = x$

18) $6^y = x$

$\log_6 x = y$

19) $9^y = x$

$\log_9 x = y$

20) $b^a = 123$

$\log_b 123 = a$

Evaluate each expression.

21) $\log_4 64 = 3$

22) $\log_6 216 = 3$

23) $\log_4 16 = 2$

24) $\log_3 \frac{1}{243} = -5$

25) $\log_5 125 = 3$

26) $\log_2 4 = 2$

27) $\log_{343} 7 = 1/3$

28) $\log_2 16 = 4$

29) $\log_{64} 4 = 1/3$

30) $\log_6 \frac{1}{216} = -3$

Simplify each expression.

31) $12^{\log_{12} 144} = 144$

32) $5^{\log_5 17} = 17$

33) $x^{\log_x 72} = 72$

34) $9^{\log_3 20} = \left(3^2\right)^{\log_3 20}$

$= \left(3^{\log_3 20}\right)^2 = 20^2 = 400$

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