

Name : \_\_\_\_\_ Score : \_\_\_\_\_

Teacher : \_\_\_\_\_ Date : \_\_\_\_\_

## The Meaning of Logarithms

Rewrite each in exponential form.

1)  $\log_w h = 3$

$$w^3 = h$$

2)  $\log_w \frac{5}{29} = -z$

$$w^{-z} = \frac{5}{29}$$

3)  $\log_2 \frac{1}{16} = -4$

$$2^{-4} = \frac{1}{16}$$

4)  $\log_{-5} z = x$

$$-5^x = z$$

5)  $\log_3 y = m$

$$3^m = y$$

6)  $\log_2 \frac{1}{8} = -3$

$$2^{-3} = \frac{1}{8}$$

Rewrite each in logarithmic form.

7)  $4^4 = 256$

$$\log_4 256 = 4$$

8)  $x^{-2} = s$

$$\log_x s = -2$$

9)  $3^2 = 9$

$$\log_3 9 = 2$$

10)  $64^{\frac{1}{3}} = 4$

$$\log_{64} 4 = \frac{1}{3}$$

11)  $w^n = \frac{11}{19}$

$$\log_w \frac{11}{19} = n$$

12)  $1024^{\frac{1}{5}} = 4$

$$\log_{1024} 4 = \frac{1}{5}$$



Name : \_\_\_\_\_ Score : \_\_\_\_\_

Teacher : \_\_\_\_\_ Date : \_\_\_\_\_

## The Meaning of Logarithms

Evaluate each expression.

1)  $\log_{169} 13$

2

2)  $\log_{216} 6$

3

3)  $\log_3 \frac{1}{81}$

-4

4)  $\log_4 \frac{1}{1024}$

-5

5)  $\log_{12} 144$

2

6)  $\log_2 \frac{1}{8}$

-3

7)  $\log_4 256$

4

8)  $\log_4 1024$

5

9)  $\log_2 4$

2

10)  $\log_9 \frac{1}{729}$

-3

11)  $\log_{81} 3 = x$

$$81^x = 3$$

$$(3^4)^x = 3^1$$

$$4x = 1$$

$$x = \frac{1}{4}$$

12)  $\log_{243} 3 = x$

$$243^x = 3$$

$$3^{5x} = 3^1$$

$$5x = 1$$

$$x = \frac{1}{5}$$

