

## SM3 HW #5-4 (Logarithms)

Date \_\_\_\_\_ Period \_\_\_\_\_

- a) Identify the domain  
b) Identify the range.  
c) Vertical Asymptote  
d) Describe how it is a transformation of its parent function.

1)  $y = \log_4 (x - 1) - 1$

2)  $y = 3 \log_5 (x - 2) + 4$

3)  $y = \frac{1}{2} \cdot \ln (x + 4) - 3$

4)  $y = \log_4 (x + 2) + 4$

Use a calculator to approximate each to the nearest thousandth.

5)  $\log 13$

6)  $\ln 43$

Find the inverse of each function.

7)  $y = \log_4 (x + 8)$

8)  $y = 10 \log_6 x$

9)  $y = \log_4 (-4x)$

10)  $y = -3 \log_2 x$

11)  $y = 10^x + 1$

12)  $y = \frac{6^x}{4}$

13)  $y = -\frac{3^x}{2}$

14)  $y = 3^x + 4$

15) What is the oblique asymptote?

$$y = \frac{x^2 + 3x + 2}{x + 5}$$

**Find the inverse of each function.**

16)  $g(x) = \sqrt[5]{x + 1} - 2$

**Rewrite each equation in exponential form then solve for 'x'.**

17)  $\log_x \frac{1}{64} = -2$

18)  $\log_9 81 = x$

19)  $\log_7 x = 2$

**Rewrite each equation in logarithmic form.**

20)  $3^{-5} = \frac{1}{243}$

21)  $16^{-\frac{1}{2}} = \frac{1}{4}$

22)  $196^{\frac{1}{2}} = 14$