

Name: _____

Logarithmic Functions

Exercise 1: Write the exponential equation in logarithmic form.

1) $3^3 = 27$

2) $10^2 = 100$

3) $5^3 = 125$

4) $4^3 = 64$

Exercise 2: Find the domain and the x-intercept of the logarithmic function

1) $h(x) = \log_2(x - 2) - 1$

2) $f(x) = \log_2(x - 3) - 3$

3) $f(x) = \log_4(x - 1)$

4) $h(x) = \log_2 x + 4$

5) $f(x) = \log_4(x - 5)$

6) $h(x) = \log_7(x) + 4$

7) $f(x) = \log_2(x - 4)$

8) $h(x) = \log_5(x - 1) + 4$

Exercise 3: Sketch the graph of the functions $f(x) = 3^x$ and $g(x) = \log_3 x$. Considering the graphs, describe the relationship between $f(x)$ and $g(x)$. Specify the domain and the range of g .**Exercise 4:** Evaluate the expression without using the calculator if possible

1) $\log_3 243$

2) $\log_{10} 1000$

3) $\log_2 16$

4) $\log_3 27$

5) $\log_4 144$

6) $\log_3 9$

7) $\log_5 125$

8) $\log_5 25$

9) $\log_4 64$

10) $\log_{14} 196$

11) $\log_5 625$

12) $\log_{100} 10000$

13) $\log_5(-25)$

14) $\log_5 1$

15) $\log_5 125$

16) $\log_5 0$

17) $\log_3 \sqrt{27}$

18) $\log_5 \left(\frac{1}{5^9} \right)$

19) $\log_5 \left(\frac{1}{5} \right)$

20) $\log_5 5^4$