

# Exponential and Log Graphs Homework

**#1 – 3.** Write the equation for the asymptote of each function below. Would the function's graph show exponential growth, or exponential decay?

1.  $f(x) = 4^x + 3$   
 $y = 3$  Growth

2.  $g(x) = 3\left(\frac{5}{8}\right)^{x-4}$   
 $y = 0$  Decay

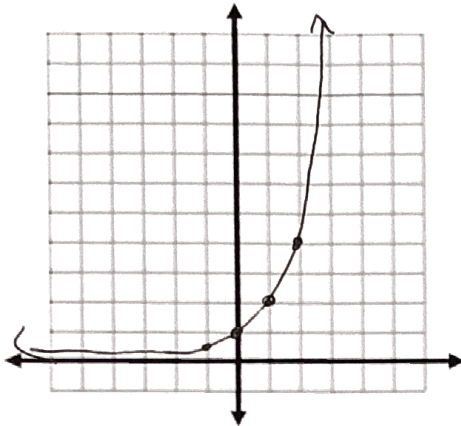
3.  $f(x) = 2(3)^{x-1} - 5$   
 $y = -5$  Growth

**#4 – 7.** Graph each exponential function using the table provided. Then find the equation for the asymptote, and the function's domain and range.

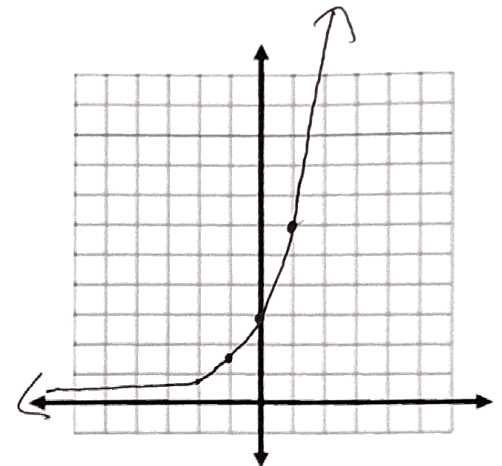
4.  $f(x) = 2^x$

5.  $g(x) = 3(2)^x$

x	y
-3	
-2	
-1	
0	
1	
2	
3	



x	y
-3	
-2	
-1	
0	
1	
2	
3	



Asymptote:  $y = 0$

Asymptote:  $y = 0$

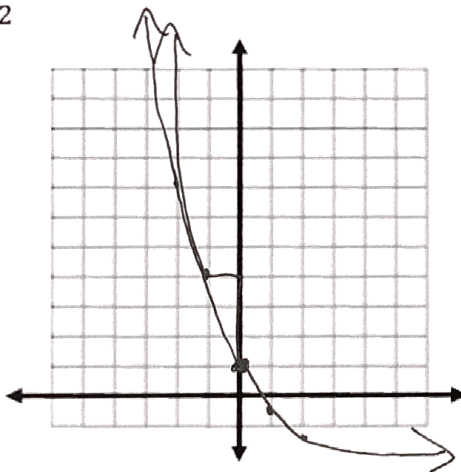
Domain:  $(-\infty, \infty)$       Range:  $(0, \infty)$

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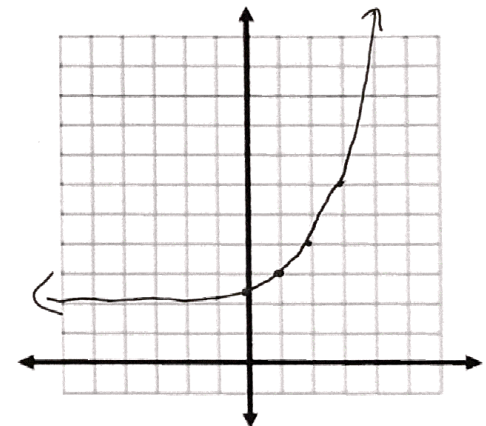
6.  $f(x) = 3\left(\frac{1}{2}\right)^x - 2$

7.  $g(x) = 2^{x-1} + 2$

x	y
-3	
-2	
-1	
0	
1	
2	
3	



x	y
-3	
-2	
-1	
0	
1	
2	
3	



Asymptote:  $y = -2$

Asymptote:  $y = 2$

Domain:  $(-\infty, \infty)$       Range:  $(-2, \infty)$

Domain:  $(-\infty, \infty)$       Range:  $(2, \infty)$

**#8 – 10. Convert each log function to an exponential function.**

8.  $y = \log_5 x$

$5^y = x$

9.  $y = \log_4 x - 4$

$4^{y+4} = x$

10.  $y = \log_6(x - 2) + 1$

$6^{y-1} + 2 = x$

**#11 – 13. Describe the transformations of each log function.**

11.  $f(x) = \log_5(x + 3)$

← 3

12.  $g(x) = \log_4 x - 4$

↓ 4

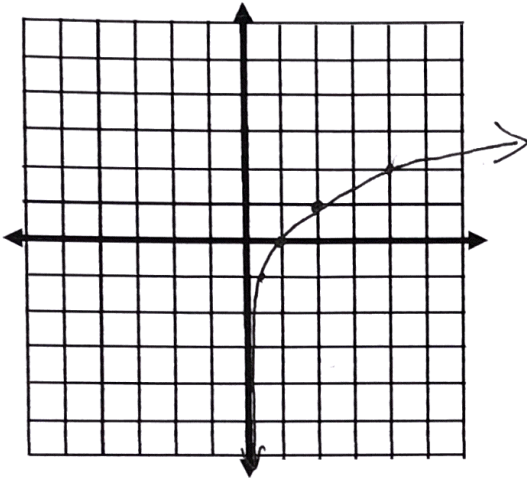
13.  $f(x) = \log_6(x - 2) + 1$

→ 2 ↑ 1

**#14 – 17. Graph each exponential function using the table provided. Then find the equation for the asymptote, and the function's domain and range.**

14.  $f(x) = \log_2 x$

x	y
	-3
	-2
	-1
	0
	1
	2
	3

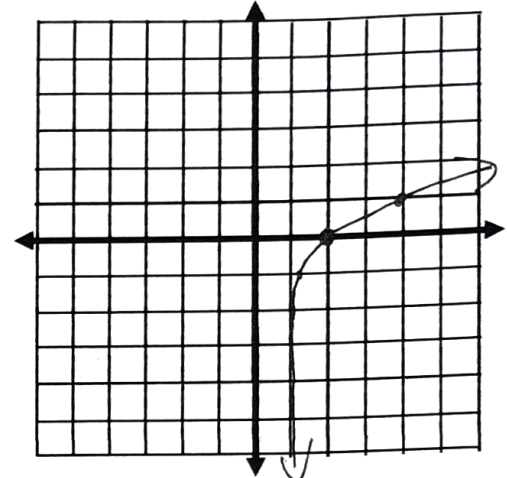


Asymptote:  $x=0$

Domain:  $(0, \infty)$       Range:  $(-\infty, \infty)$

15.  $g(x) = \log_3(x - 1)$

x	y
	-3
	-2
	-1
	0
	1
	2
	3

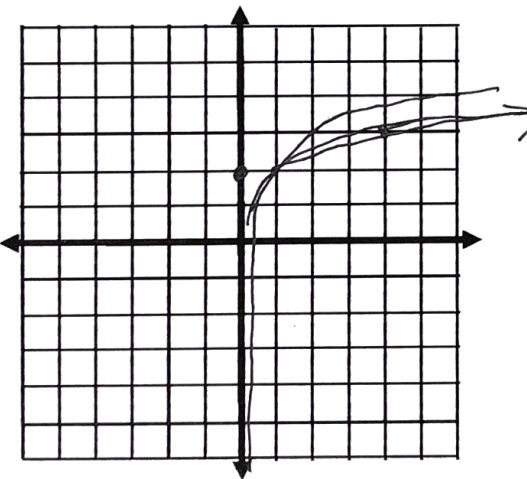


Asymptote:  $x=1$

Domain:  $(1, \infty)$       Range:  $(-\infty, \infty)$

16.  $f(x) = \log_4 x + 2$

x	y
	-3
	-2
	-1
	0
	1
	2
	3

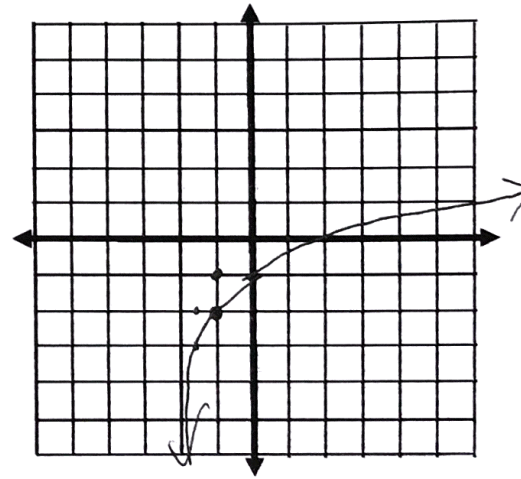


Asymptote:  $x=0$

Domain:  $(0, \infty)$       Range:  $(-\infty, \infty)$

17.  $g(x) = \log_2(x + 2) - 3$

x	y
	-3
	-2
	-1
	0
	1
	2
	3



Asymptote:  $x=-2$

Domain:  $(-2, \infty)$       Range:  $(-\infty, \infty)$

#18 – 23. Match the equation with the graph (the asymptotes are shown on the graph).

a 18.  $f(x) = \log_3(x + 1)$

d 19.  $f(x) = 4(2)^x$

f 20.  $f(x) = (0.5)^{x+1}$

e 21.  $f(x) = \log(x - 1) + 3$

c 22.  $f(x) = 2^{x-2} + 1$

b 23.  $f(x) = \log_4 x - 4$

