

**P5-2: Graphing Logarithmic and Exponential Functions**

Honors Advanced Algebra

Name \_\_\_\_\_

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

For each of the following problems, you will be given one exponential function and one logarithmic function. Graph the pair of functions in different colors on the same coordinate plane. Determine the domain and range for each, the logarithmic and exponential functions.

1. Logarithmic:  $y = \log_{\frac{1}{2}} x$

Exponential:  $y = \left(\frac{1}{2}\right)^x$

x	y
0.5	1
1	0
2	-1
4	-2
8	-3

Logarithmic:

Domain:  $(0, \infty)$

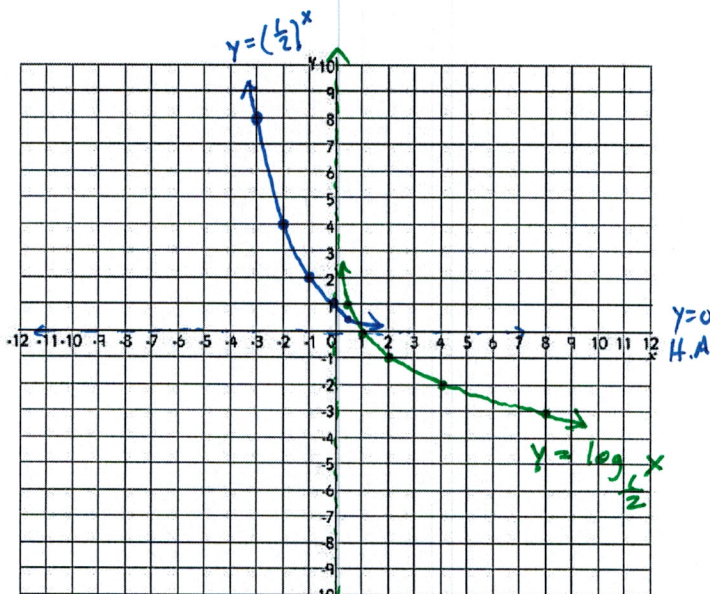
Range:  $(-\infty, \infty)$

Exponential:

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

Range:  $(0, \infty)$

x	y
-3	8
-2	4
-1	2
0	1
1	.5



$x=0$  V.A.

2. Logarithmic:  $y = \log_3 x$

Exponential:  $y = 3^x$

x	y
0.5	-0.630
1	0
3	1
9	2

Logarithmic:

Domain:  $(0, \infty)$

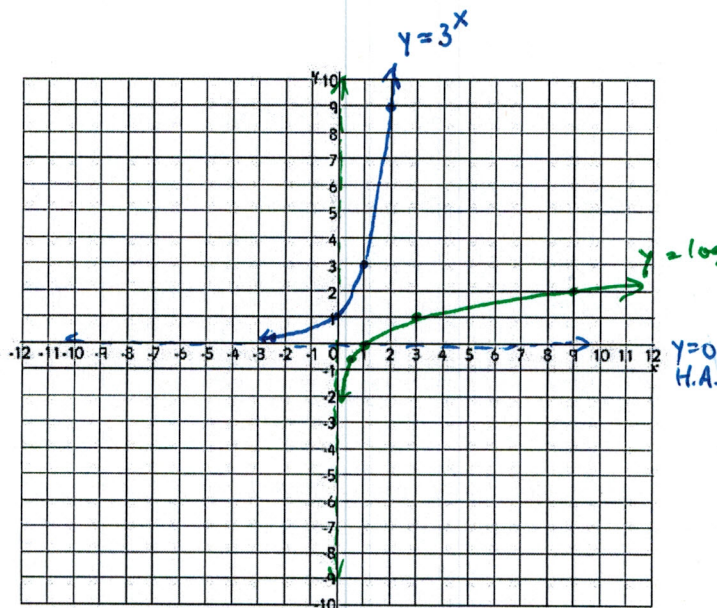
Range:  $(-\infty, \infty)$

Exponential:

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

Range:  $(0, \infty)$

x	y
-2.5	~0.064
0	1
1	3
2	9



$x=0$  V.A.

3. Logarithmic:  $y = \log_4 2x$   
 Exponential:  $y = \frac{1}{2}(4)^x$

x	y
0.5	0
2	1
8	2
12	2.292

Logarithmic:

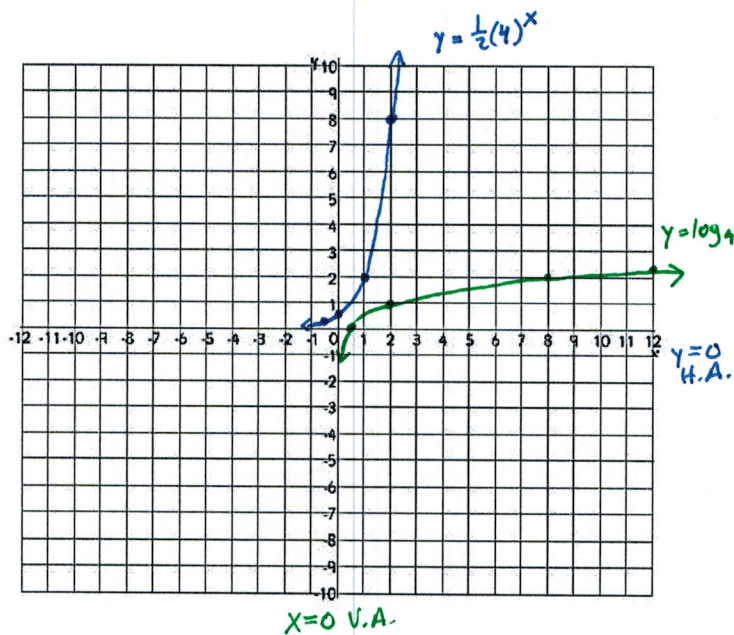
Domain:  $(0, \infty)$

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

Exponential:

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

Range:  $(0, \infty)$



x	y
-0.5	0.25
0	0.5
1	2
2	8

4. Logarithmic:  $y = \log_2(x + 3)$   
 Exponential:  $y = 2^x - 3$

x	y
-2.5	-1
-2	0
-1	1
1	2
0	1.585
5	3

Logarithmic:

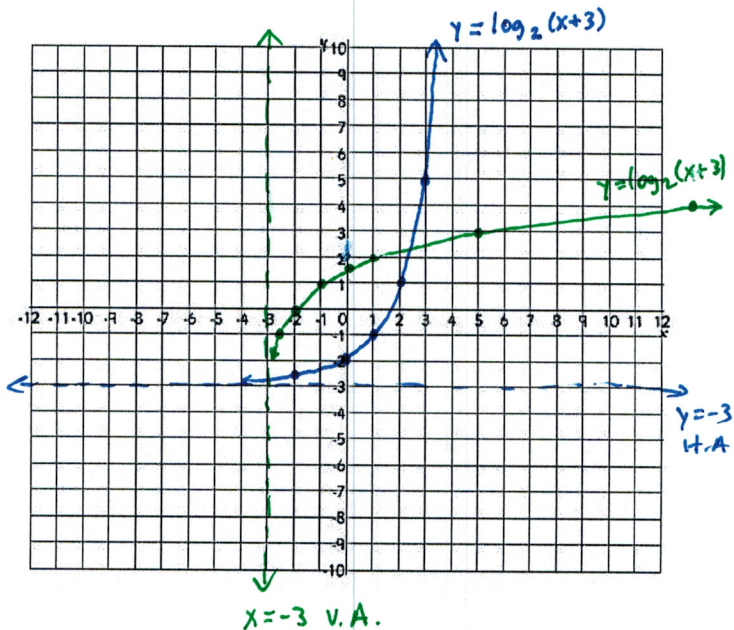
Domain:  $(-3, \infty)$

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

Exponential:

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

Range:  $(-3, \infty)$



x	y
-2	-2.75
0	-2
1	-1
2	5

5. Logarithmic:  $y = (\log_3 x) - 1$   
 Exponential:  $y = 3^{x+1}$

x	y
0.5	-1.631
1	-1
3	0
9	1

Logarithmic:

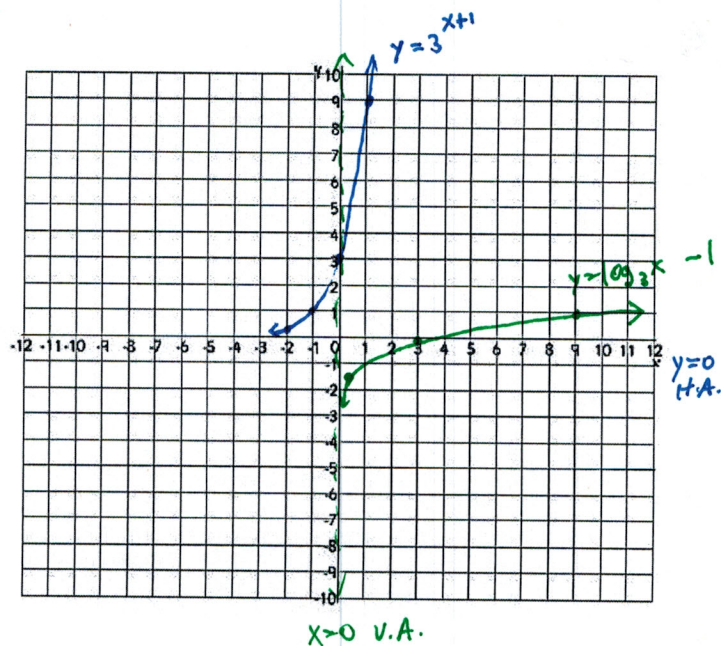
Domain:  $(0, \infty)$

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

Exponential:

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

Range:  $(0, \infty)$



x	y
-2	0.3
-1	1
0	3
1	9