

Graphing Logarithmic Functions for $b > 1$

Name _____

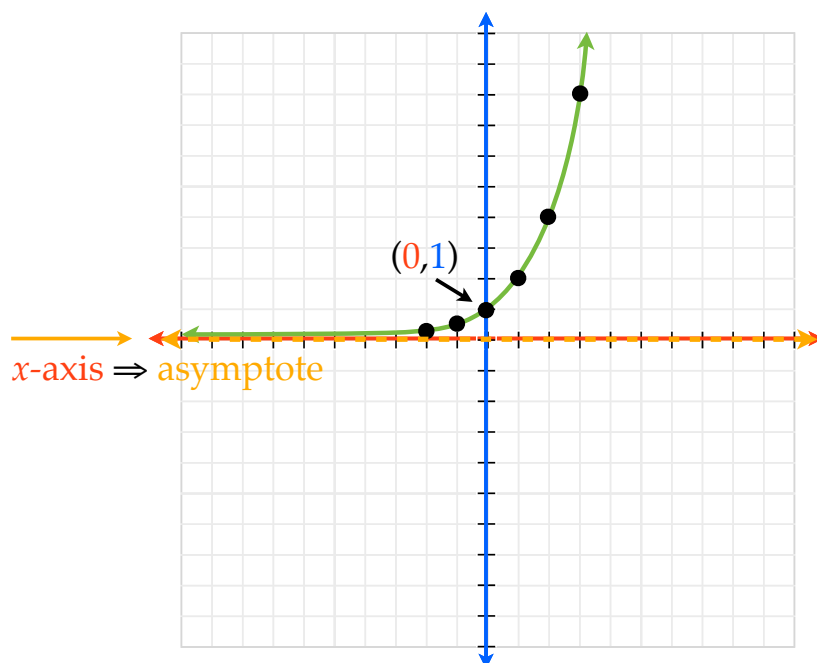
Date _____ Period _____

Exponential Function

$$y = 2^x$$

$$b = 2$$

x	y
-2	0.25
-1	0.5
0	1
1	2
2	4
3	8



Exponential Function

$$y = 2^x$$

$$b = 2$$

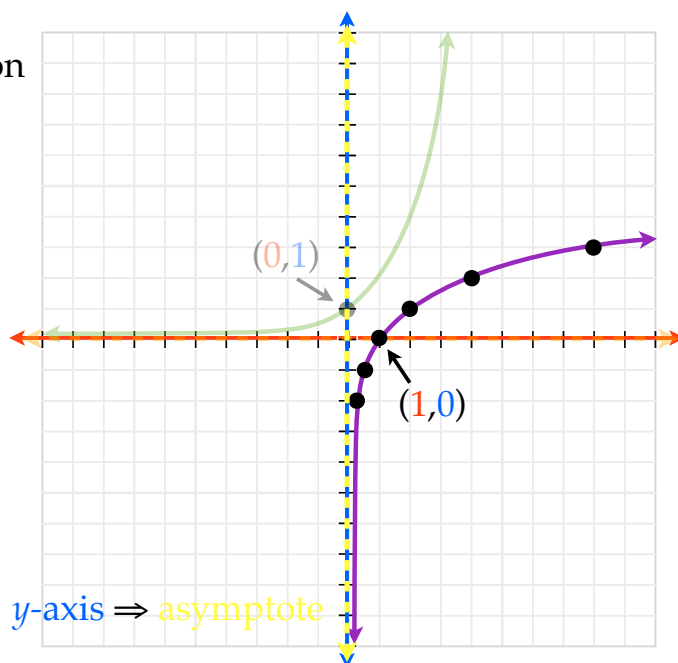
x	y
-2	0.25
-1	0.5
0	1
1	2
2	4
3	8

Logarithmic Function

$$y = \log_2 x$$

$$b = 2$$

x	y
0.25	-2
0.5	-1
1	0
2	1
4	2
8	3



Logarithmic Equation

$|a|$ stretches or compresses graph vertically
if $a < 0$, flips graph across x -axis

h gives the horizontal translation
 $h > 0$ shifts right; $h < 0$ shifts left

$$y = a \cdot \log_b (x - h) + k$$

base of logarithmic equation
 $b > 1$

k gives the vertical translation
 $k > 0$ shifts up; $k < 0$ shifts down

Logarithmic Equation

$$y = a \cdot \log_b (x - h) + k$$

Given the following logarithmic function, label a , b , h , and k .

$$y = \log_2 (x - 3) - 5$$

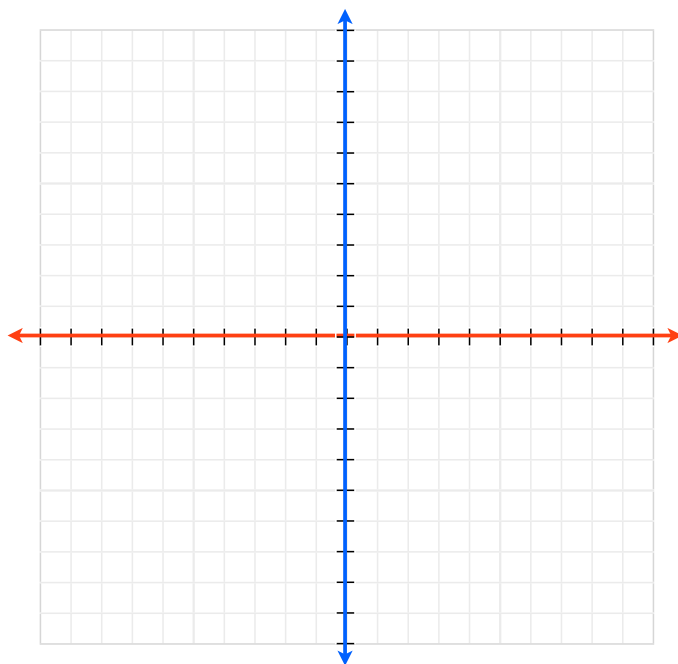
$$y = 2 \log x + 2$$

$$y = -\log_7 (x - 1)$$

$$y = \log_2 (x + 4) + 3$$

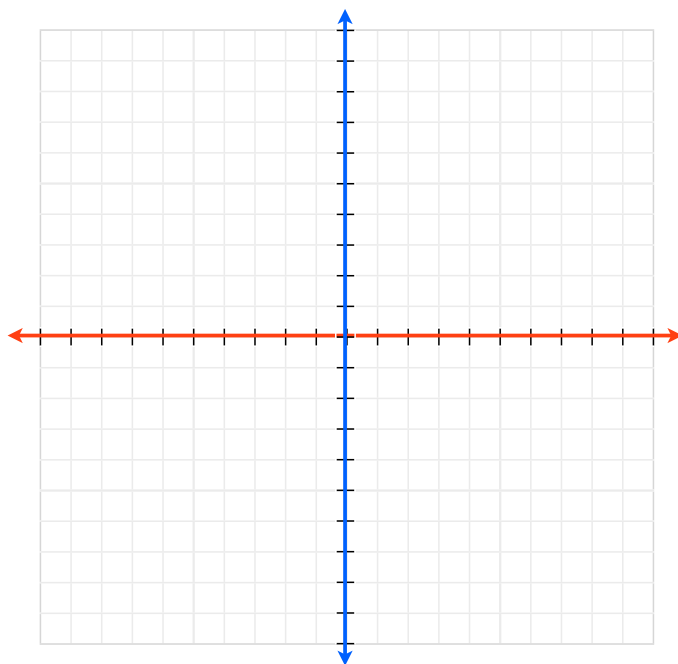
Graph the following logarithmic equation

$$y = \log_2(x - 2) + 1$$



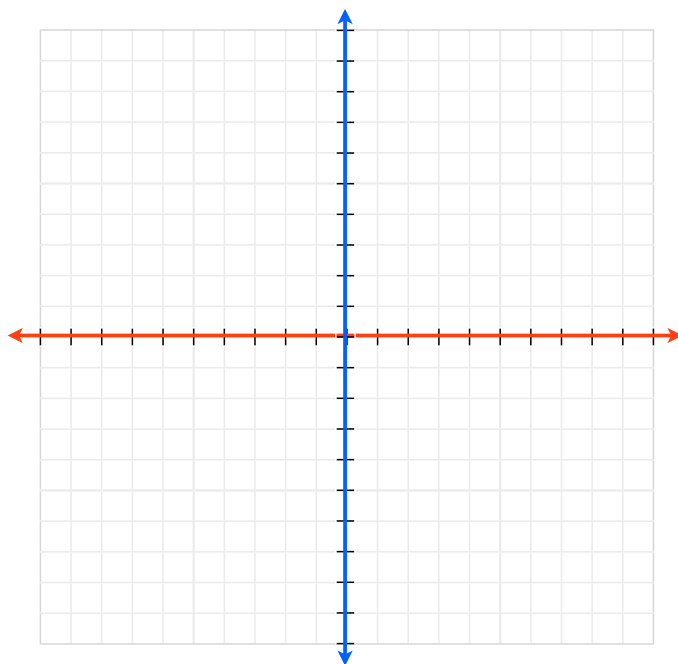
Graph the following logarithmic equation

$$y = \log_2(x + 4) - 3$$



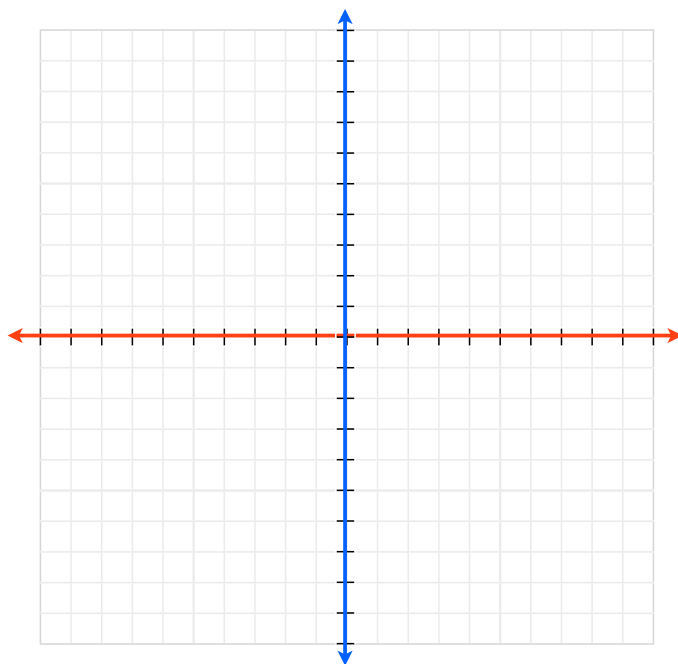
Graph the following logarithmic equation

$$y = -\log_2(x + 1) + 3$$



Graph the following logarithmic equation

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



Logarithmic Equation

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h gives the horizontal translation
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$$y = a \cdot \log_b (x - h) + k$$

base of logarithmic equation
 $b > 1$

k gives the vertical translation
 $k > 0$ shifts up; $k < 0$ shifts down