

Logarithmic Graphs  
Lesson 7  
Springboard 23.3

Warm-up

Rewrite in logarithmic form

1)  $y^3 = 27$

2)  $4^a = c$

3)  $2^3 = 8$

4)  $4^3 = x$

Parent Graph

$$y = \log_b x$$

FIND DOMAIN AND RANGE, Asymptotes

I Try:

Graph  $y = \log_3 x$

Identify b	
Plot the 3 points $\left(\frac{1}{b}, -1\right), (1, 0), (b, 1)$ asymptote :x=-h Domain: Range :	
Connect points and finish	

graph.	
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We Try:  
Graph  $y = \log x$

Identify b	
Plot the 3 points $\left(\frac{1}{b}, -1\right), (1,0), (b, 1)$ asymptote: $x=0$ Domain and Range	
Connect points and finish graph.	

You try with your partner:

Graph  $y = \ln x$

Identify b	
Plot the 3 points $\left(\frac{1}{b}, -1\right), (1,0), (b, 1)$	
Connect points and finish graph.	

Graphing with transformations.

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

I Try:

$$\text{Graph } y = \log_3(x + 2) - 3$$

Identify b	
Plot the 3 points $\left(\frac{1}{b}, -1\right), (1, 0), (b, 1)$	
Multiply y values by "a" then apply translations	
Connect dots and finish graph.	Domain: Range: Asymptote: $x = -2$

a

We Try:

$$\text{Graph } y = \ln(x - 2) - 1$$

Identify b	
Plot the 3 points $\left(\frac{1}{b}, -1\right), (1,0), (b, 1)$	
Multiply y values by "a" then apply translations	
Connect dots and finish graph.	

You Try:

$$\text{Graph } y = -2\log_3(x - 1) + 2$$

Identify b	
Plot the 3 points $\left(\frac{1}{b}, -1\right), (1,0), (b, 1)$	
Multiply y values by "a" then apply translations	
Connect dots and finish graph.	

You Try:

$$\text{Graph } y = -2\log_2(x - 2) + 3$$

Identify b	
Plot the 3 points $\left(\frac{1}{b}, -1\right), (1, 0), (b, 1)$	
Multiply y values by "a" then apply translations	
Connect dots and finish graph. Identify D,R A	

Exit Ticket

Graph  $y = \log_2(x - 1) + 2$   
Graph the parent function.

Identify the transformations:  
Horizontal shift.  
Vertical shift