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HW 5-5

1. The graph of $f(x) = \log_5 x$ passes through $(j, 0)$ and $(k, 1)$. Find the values of j and k .

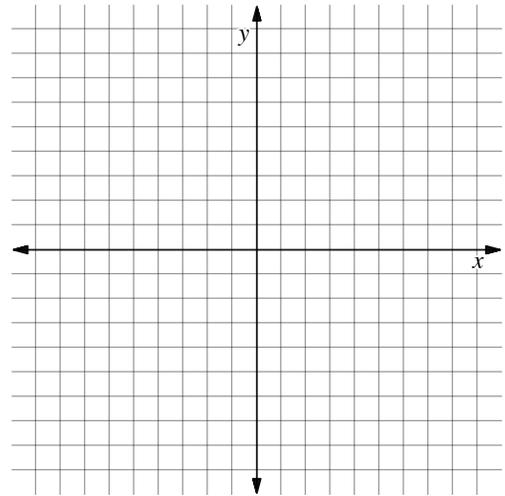
2. For each function, identify the parent function and describe the transformations that occurred.

a. $f(x) = \log_6(x - 2)$

b. $g(x) = -\log_3 x + 5$

c. $h(x) = \ln\left(\frac{x}{3}\right)$

3. Let $g(x) = \log_2(x - 3)$.
- a. Find the vertical asymptote of g .
- b. Find the x -intercept of g .
- c. Sketch a graph of g .



4. Explain why the graphs of all logarithmic functions of the form $y = \log_b x$ must pass through the points $(1, 0)$ and $(b, 1)$.
5. Find the domain and range of $f(x) = 1 + \log_4(x + 3)$.

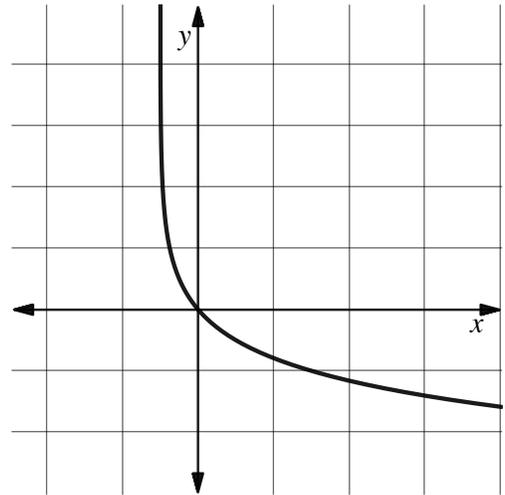
6. Which of the following equations could represent the graph shown?

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

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

C) $y = \log_2(x - 1)$

D) $y = \left(\frac{1}{2}\right)^x - 1$



7. Write an equation of a logarithmic function that passes through $(-3, 1)$ and has a vertical asymptote at $x = -7$.

8. Which of the following graphs does NOT pass through the point $(4, 1)$?

A) $y = \log_4 x$

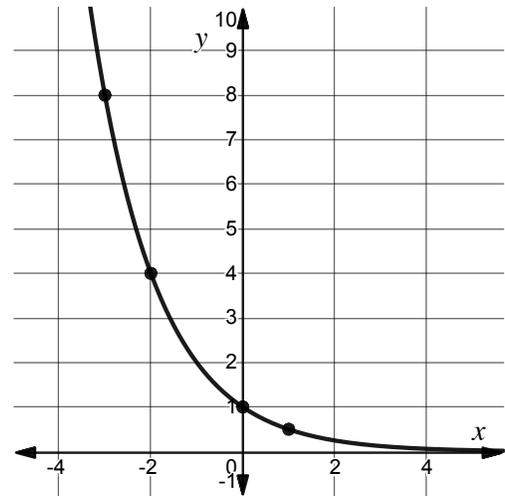
B) $y = \log_2\left(\frac{x}{2}\right)$

C) $y = \log_8(2x)$

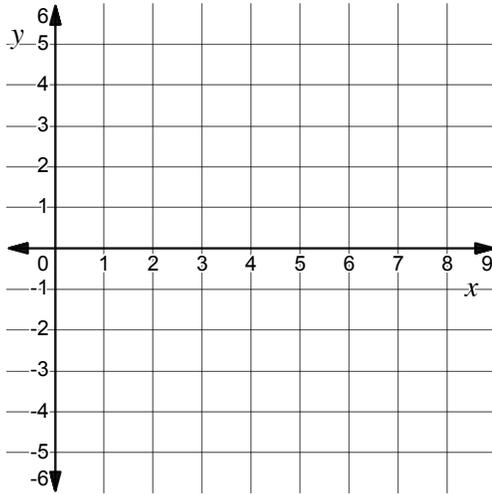
D) $y = \log_4 x - 1$

9. The graph of an exponential function is shown.

a. Write the equation of its inverse function.



b. Sketch its inverse function.



10.

Consider the graphs of $f(x) = \log_b x$ and $g(x) = b^x$. Find two possible values for b so that the graphs intersect.