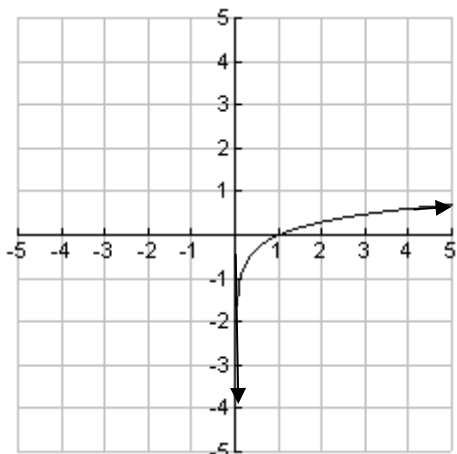


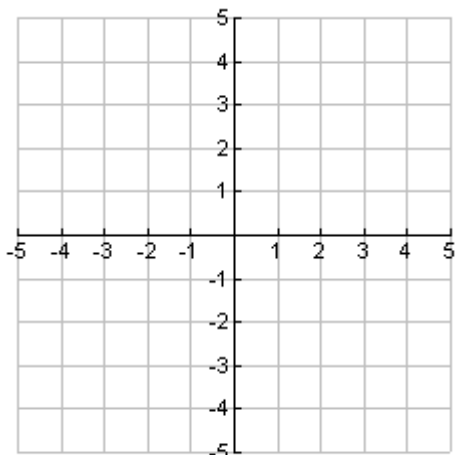
Graphs of Log Functions

The parent function of a Logarithmic function is $y = \log x$. Recall that $\log x$ refers to the common log and is equivalent to $y = \log_{10} x$.



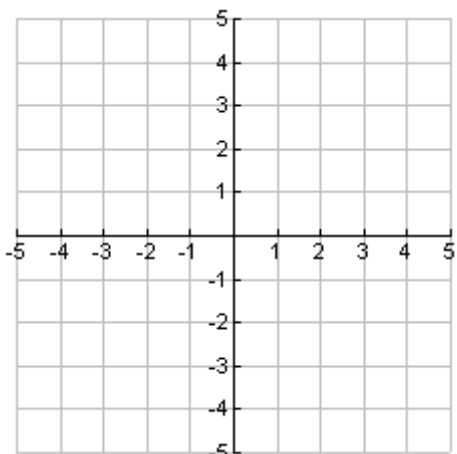
1. Identify a reasonable domain for this function:
2. Identify a reasonable range for this function:
3. Is there an x-intercept? If yes, what is it?
4. Is there a y-intercept? If yes, what is it?

For the following exercises, graph the functions on your calculator, then sketch them in the blank grids. Select window settings like the ones in the graph above.



7. Sketch the graphs of:
 - a. $y = \log x + 1$
 - b. $y = \log x - 2$
 - c. $y = \log(x - 2)$
 - d. $y = \log(x + 2)$
8. What happens when you add a constant to $\log x$?
9. What happens when you add a constant to the argument of \log ?

10. Compare the graphs of $y = \log x$ and $y = \log(x - 1) + 2$. What is different and what is the same about the two graphs?

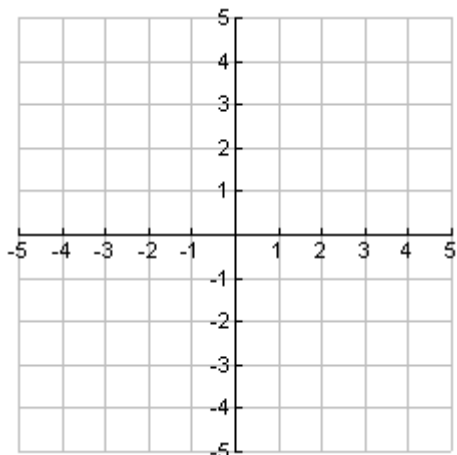


11. Sketch the graphs of

a. $y = 2 \log x$ b. $y = \frac{1}{2} \log x$

12. What does multiplying the parent function by a number greater than 1 do to the graph?

13. What does multiplying the parent function by a number between 0 and 1 do to the graph?



14. Sketch the graphs of

a. $y = - \log x$ b. $y = -3 \log x$

15. What does multiplying the parent function by a negative number do to the graph?

16. Write the equation of a graph that is a reduction of the graph of $y = \log x$ by a factor of $\frac{1}{4}$.

17. Write the equation of the graph that reflects the graph of $y = \log x$ over the x-axis and also enlarges it by a factor of 5.