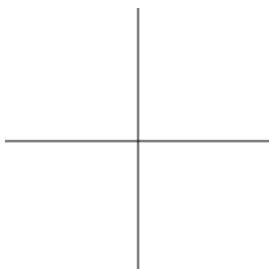


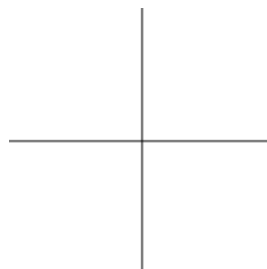
Domain and Range of Logarithms (Assignment 39)

Find the domain and range of each function below, then make a rough sketch. Your sketch only needs to show the basic shape of each function and a labeled asymptote.

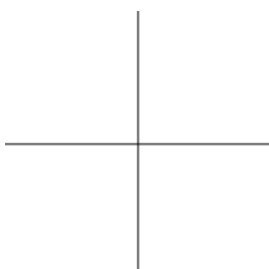
1. $y = \log_4(x - 2)$



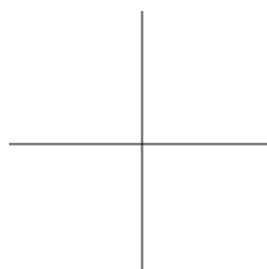
2. $y = \log_{10} 2x$



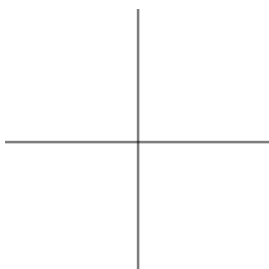
3. $y = \log_{\frac{1}{2}} x$



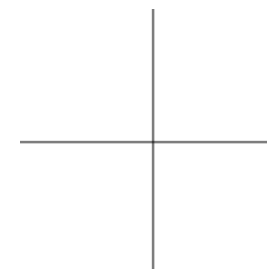
4. $y = 3^{x+3} - 4$



5. $y = \log 3x + 5$



6. $y = \log_2 -x$



Find the domain and range of each function.

7. $f(x) = \ln(2x - 1)$

8. $f(x) = \log_2 x^2$

9. $f(x) = \left(\frac{2}{3}\right)^{x+3}$

10. $f(x) = \log_5(x^2 + 3)$

11. $f(x) = e^x + 4$

12. $f(x) = \ln(|x| - 5)$

Solve each equation. Make sure that your solution is in the domain of each of the logarithms.

13. $\log_3 x = \log_3 x^2$

14. $\log x + \log(x - 3) = 1$

15. $\log_2 2^x = x - 1$

16. $(\log_2 x)^2 = 9$

17. $\frac{1}{2}\ln x = \ln(x - 2)$

18. $\log_3(\log_2 2x) = 1$