



Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

### GRAPHING LOGARITHMIC FUNCTIONS WORKSHEET

Transformations of Logarithmic Functions:  $y = a \log_b(x - h) + k$ , where  $a$  is the vertical stretch or shrink,  $h$  is the horizontal translation and  $k$  is the vertical translation. The parent graph  $y = \log_b x$  passes through the points  $(1, 0)$  and  $(b, 1)$  and has a vertical asymptote at  $x = 0$ .

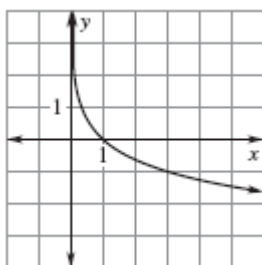
**Match the function with its graph.**

1.  $f(x) = \log_2 x$

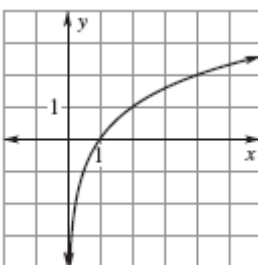
2.  $f(x) = \log_5 x$

3.  $f(x) = \log_{1/3} x$

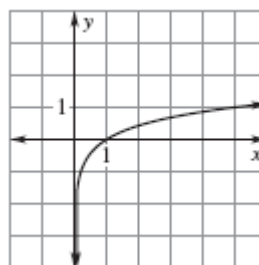
**A.**



**B.**



**C.**

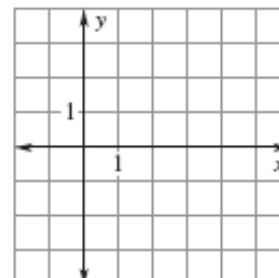
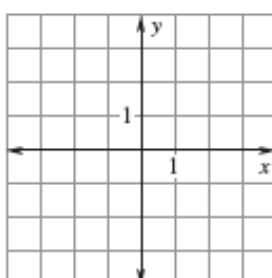
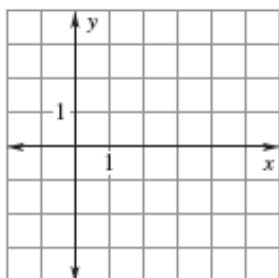


**Graph the function. State the domain and range. Identify the parent function and describe the transformations.**

4.  $f(x) = \log_3 x$

5.  $f(x) = \log_3(x + 2)$

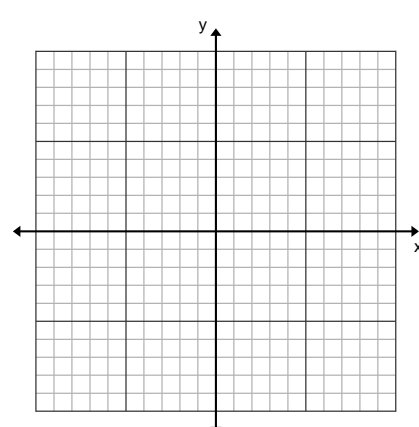
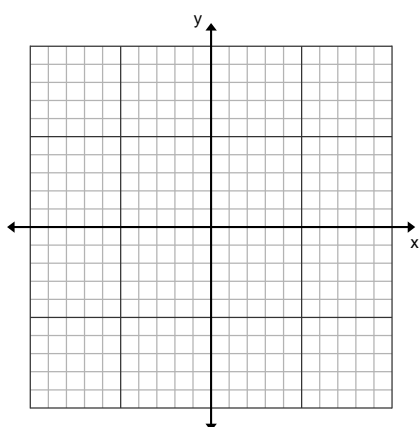
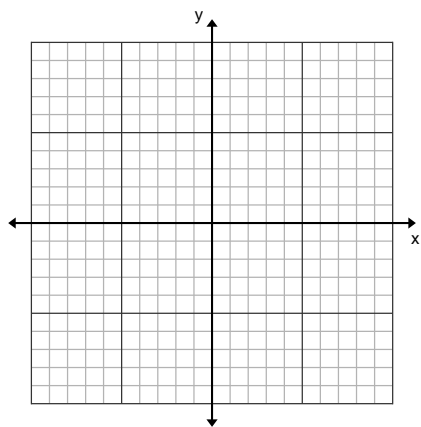
6.  $f(x) = -\log_3 x - 1$



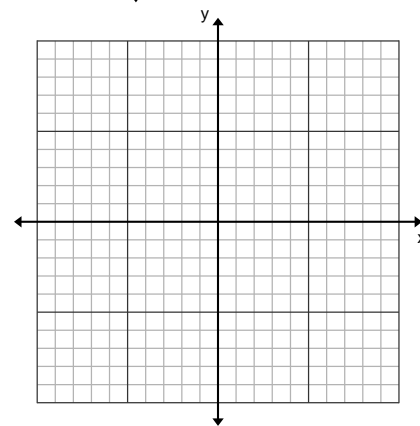
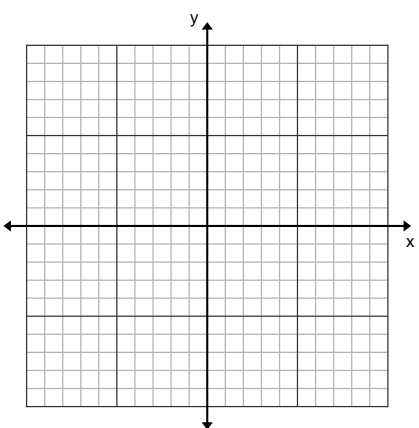
7.  $f(x) = \log_2(x-3)+1$

8.  $-\log_3(x+1)$

9.  $f(x) = 3\log_2 x - 4$



10.  $f(x) = 4\log_{1/3}(x+2)$



11.  $-\log_{1/2} x + 3$

12. The Palermo scale value of any object can be found using the equation  $PS = \log_{10} R$ , where R is the relative risk posed by the object. Write an equation in exponential form for the inverse of the function.