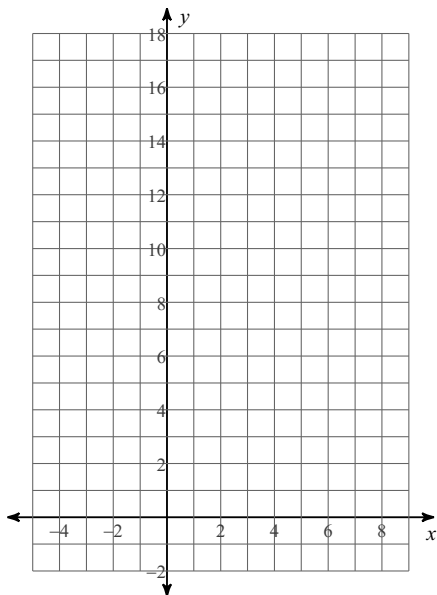


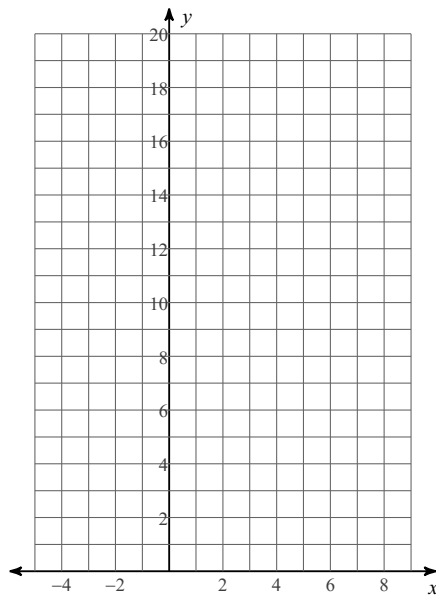
8.4 Transformations of Exponential and Logarithmic Functions

Determine the transformations of each graph. Sketch the graph of each function and then determine the domain and range of the graph.

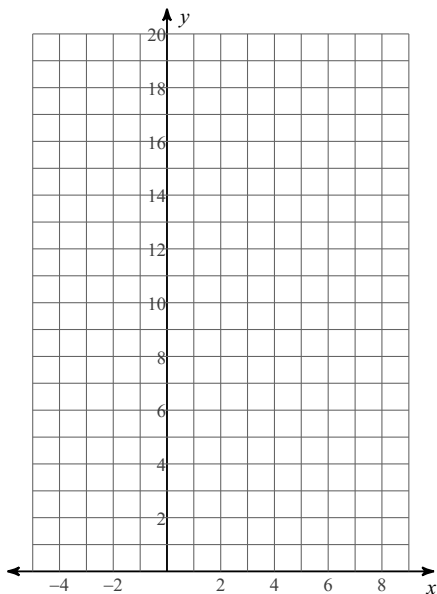
1) $f(x) = \left(\frac{1}{2}\right)^{x-2} - 2$



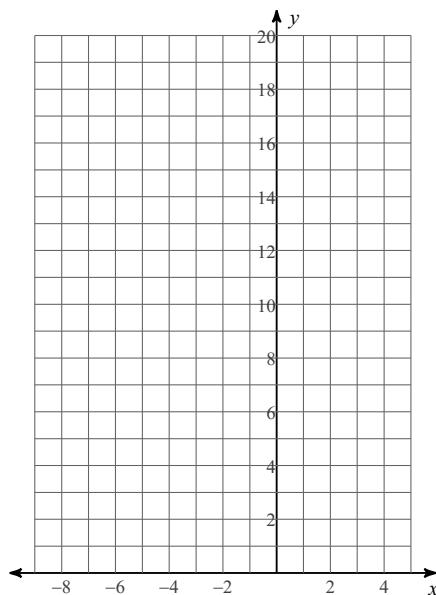
2) $f(x) = \left(\frac{1}{3}\right)^{x-2} + 2$



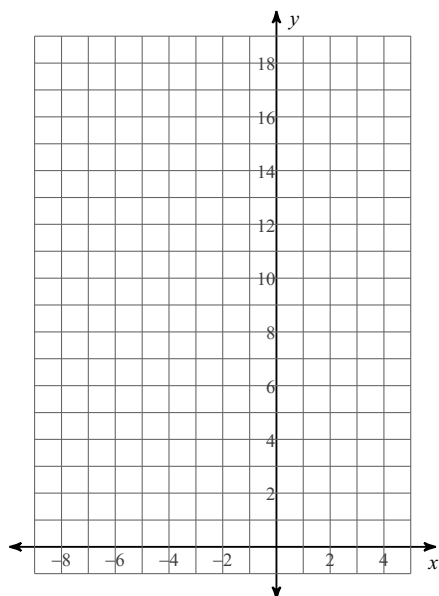
3) $f(x) = 2^{x-2} + 2$



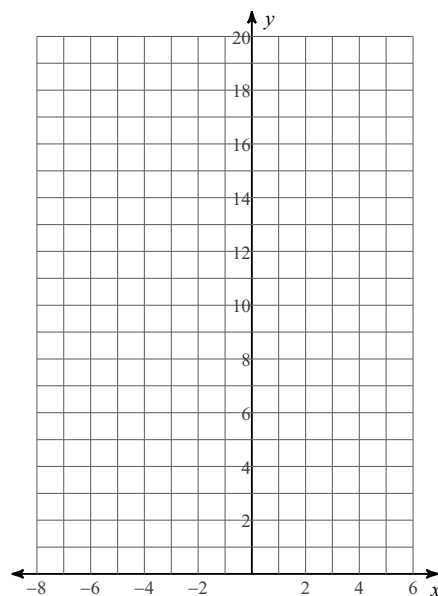
4) $f(x) = \left(\frac{1}{3}\right)^{x+2} + 2$



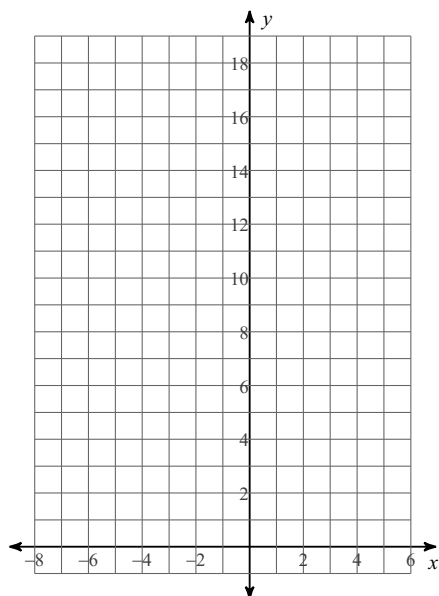
$$5) f(x) = \left(\frac{1}{2}\right)^{x+2} - 1$$



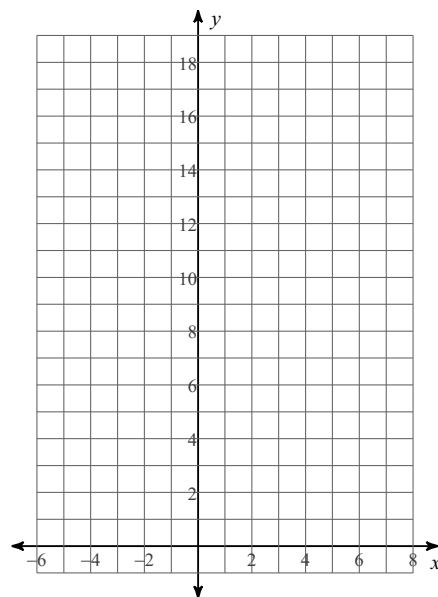
$$6) f(x) = \left(\frac{1}{4}\right)^{x+1} + 1$$



$$7) f(x) = \left(\frac{1}{2}\right)^{x+1} - 1$$



$$8) f(x) = 3^{x-1} - 1$$



Determine an exponential function given the following information.

9) Transformations: left 1, up 2, base of 3

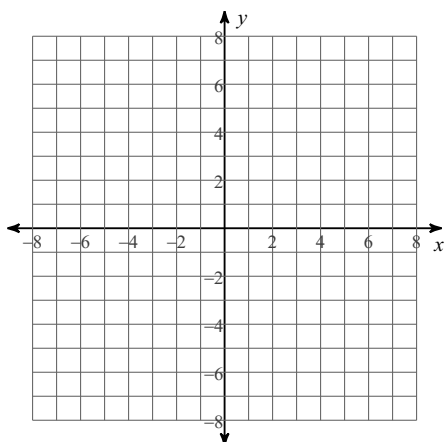
10) Transformation: right 2
Range: $(-3, \infty)$
Base of 4

11) Transformations: left 2, down 4, base of 5

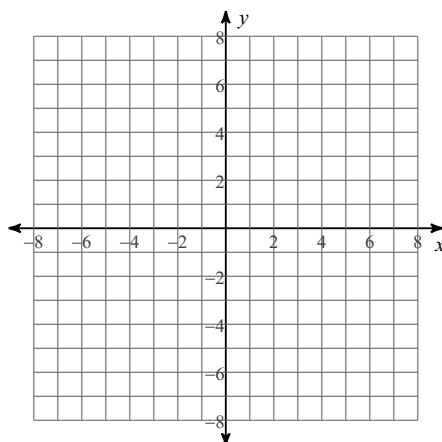
12) Transformation: left 1
Range: $(0, \infty)$
Base of 2

Determine the transformations of each logarithm. Then identify the domain and range of each and sketch the graph.

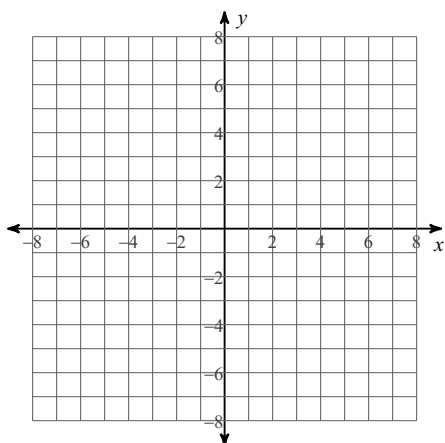
13) $f(x) = \log(x - 1) + 5$



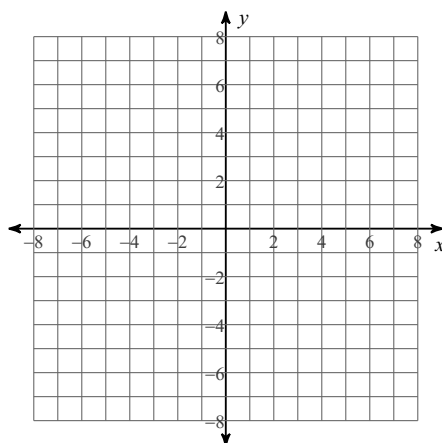
14) $f(x) = \log(x + 6) - 2$



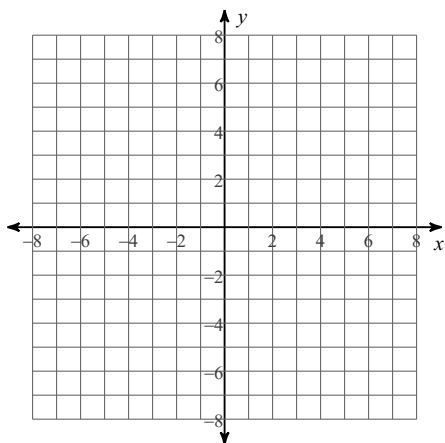
15) $f(x) = \log(x + 6) - 5$



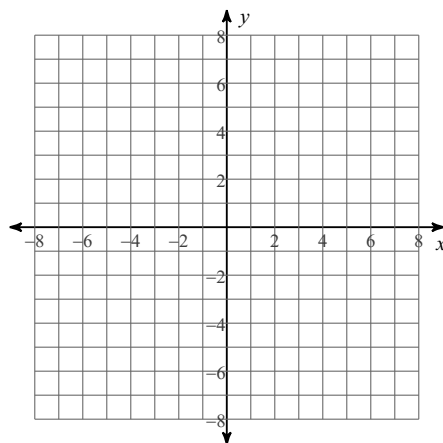
16) $f(x) = \log(x + 4) - 2$



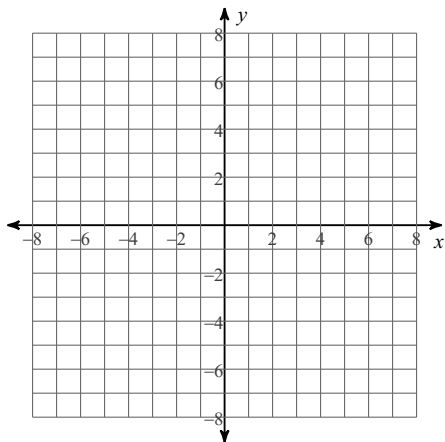
17) $f(x) = \log(x + 1) - 4$



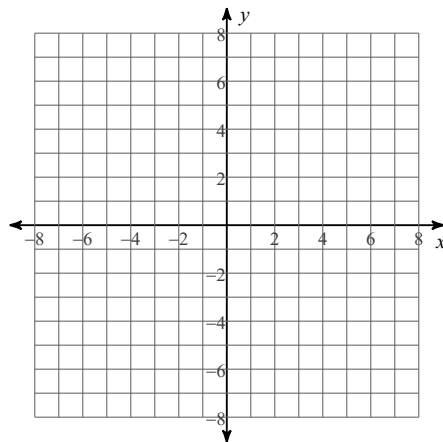
18) $f(x) = \log(x - 1) - 5$



19) $f(x) = \log(x + 3) - 5$



20) $f(x) = \log(x + 5) - 1$



Determine a logarithmic function given the following information.

21) Transformations: left 1, up 3

22) Domain: $(-2, \infty)$
 Range: $(-\infty, \infty)$
 Transformation: up 1

23) Transformations: right 1, up 2

24) Domain: $(3, \infty)$
 Range: $(-\infty, \infty)$
 Transformation: down 2