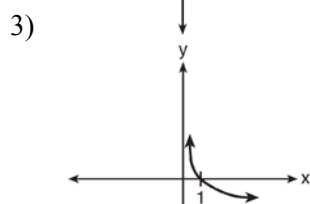
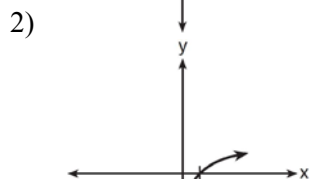
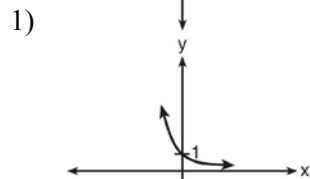
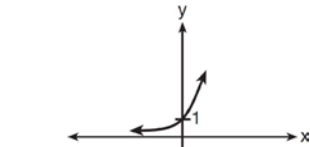
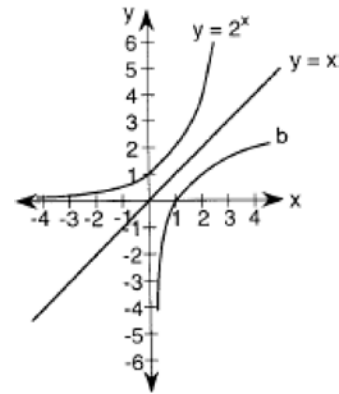


A2.A.54: Graphing Logarithmic Functions: Graph logarithmic functions, using the inverse of the related exponential function

- 1 Which sketch shows the inverse of $y = a^x$, where $a > 1$?



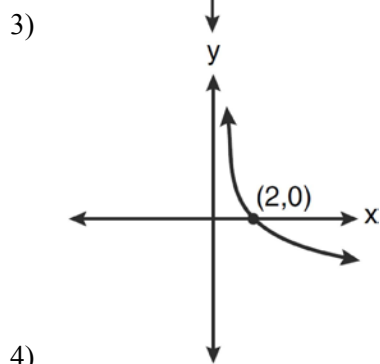
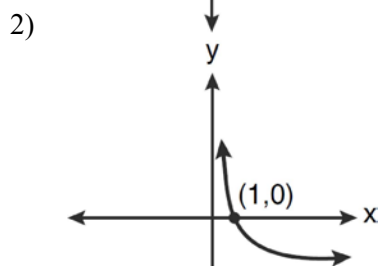
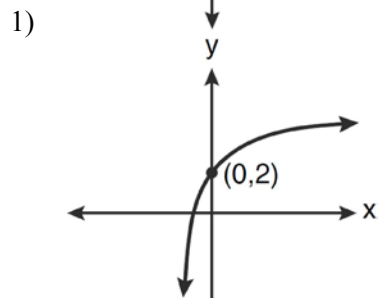
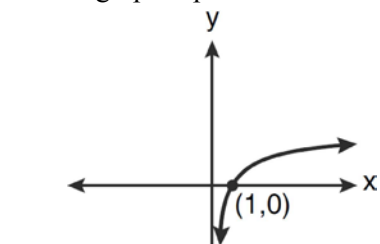
- 2 In the diagram below, figure b is the reflection of $y = 2^x$ in the line $y = x$.



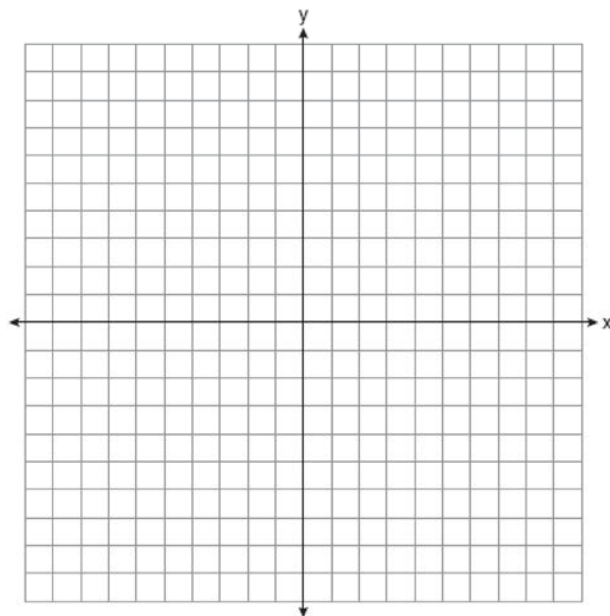
Which is an expression for the equation of figure b ?

- 1) $y = (-2)^x$
- 2) $y = 2^{-x}$
- 3) $y = \log_2 x$
- 4) $y = \log_x 2$

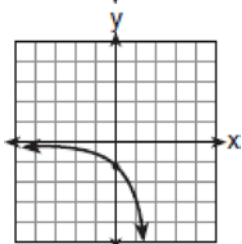
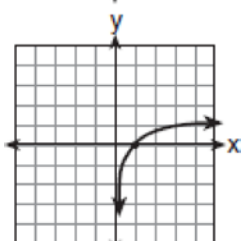
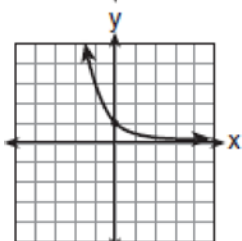
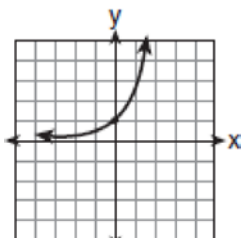
- 3 Which graph represents the function $\log_2 x = y$?



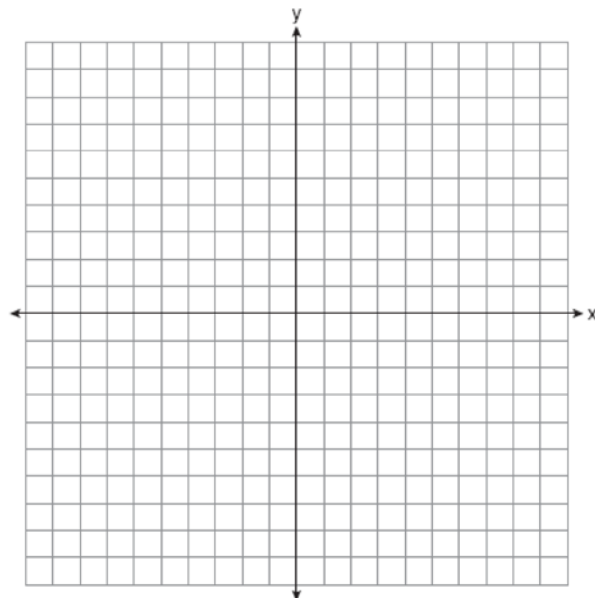
- 4 On the graph below, sketch and label the graphs of $y = \log_2 x$ and $y = 2^x$. The graphs of $y = \log_2 x$ and $y = 2^x$ are symmetrical to each other with respect to a line. What is an equation of the line of symmetry? Write an equation of the inverse of the function $y = \log_2 x$.



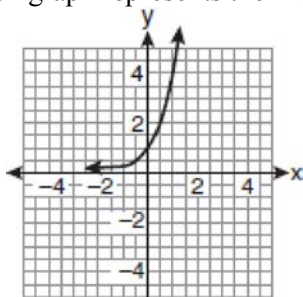
- 5 Which graph represents the inverse of the equation $y = 3^x$?



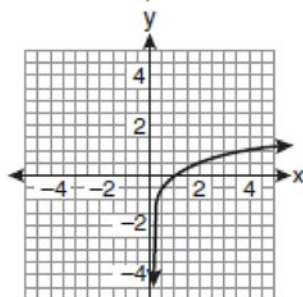
- 6 Sketch the graph of the functions $f(x) = 3^x$ and $g(x) = \log_3 x$. Considering the graphs, describe the relationship between $f(x)$ and $g(x)$. Specify the domain and the range of g .



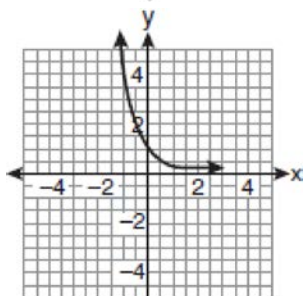
- 7 If a function is defined by the equation $f(x) = 4^x$, which graph represents the inverse of this function?



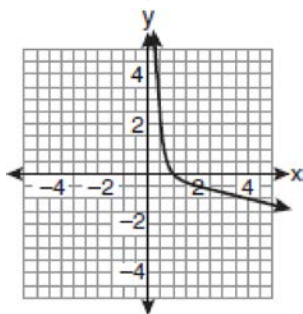
1)



2)

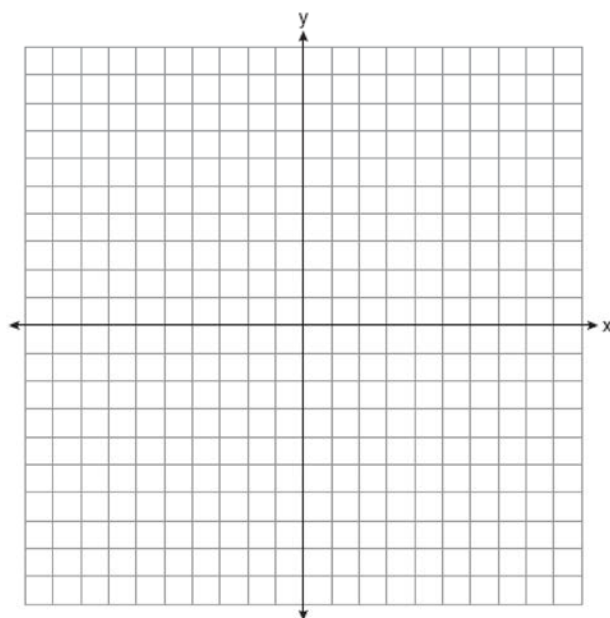


3)

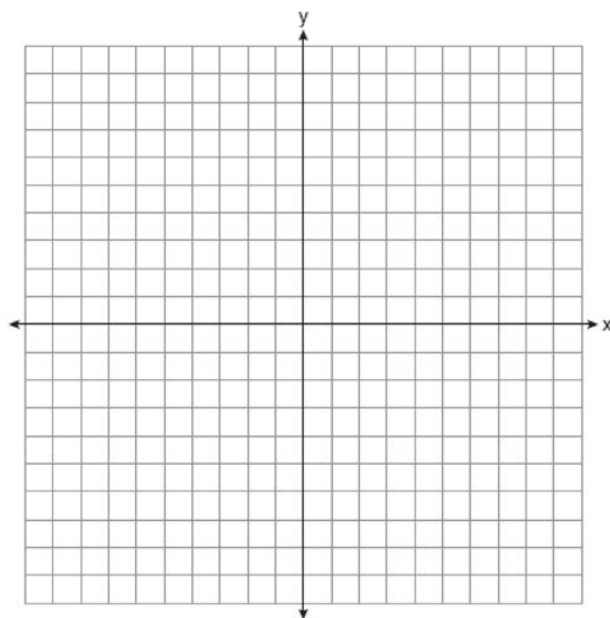


4)

- 8 Sketch below the graph of $y = 4^x$. On the same set of axes, sketch the graph of $y = \log_4 x$.



- 9 Sketch and label the graph of the equation $y = \log x$ for all values of x in the interval $0.1 \leq x \leq 10$. On the same set of axes, reflect the graph drawn in the line $y = x$, and label it c . What is the equation of c ?



A2.A.54: Graphing Logarithmic Functions: Graph logarithmic functions, using the inverse of the related exponential function
Answer Section

1 ANS: 3 REF: 011422a2

2 ANS: 3 REF: 010031siii

3 ANS: 1 REF: 061211a2

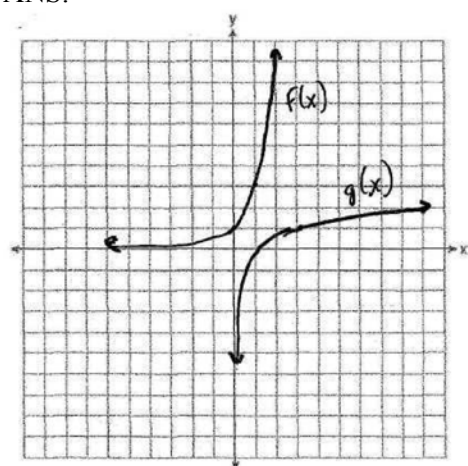
4 ANS:

$$y = x, y = 2^x \text{ or } x = \log_2 y$$

REF: 018641siii

5 ANS: 3 REF: 080329siii

6 ANS:



$f(x)$ and $g(x)$ are inverses of each other. The domain of g is the positive reals and the range of g is the reals.

REF: fall9927b

7 ANS: 2

$$f^{-1}(x) = \log_4 x$$

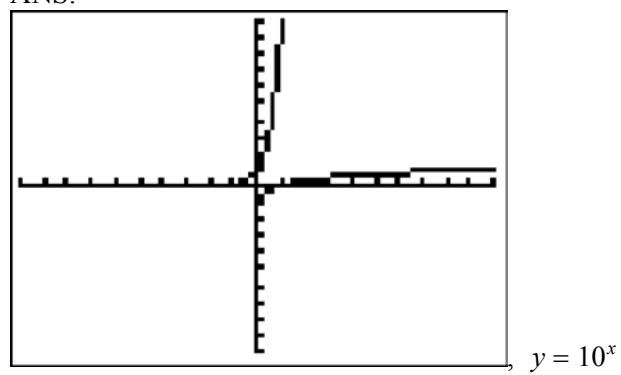
REF: fall0916a2

8 ANS:

x

REF: 069039siii

9 ANS:



REF: 019442siii