

F.IF.C.7: Graphing Logarithmic Functions 1

- 1 The asymptote of the graph of $f(x) = 5 \log(x + 4)$ is
 - 1) $y = 6$
 - 2) $x = -4$
 - 3) $x = 4$
 - 4) $y = 5$

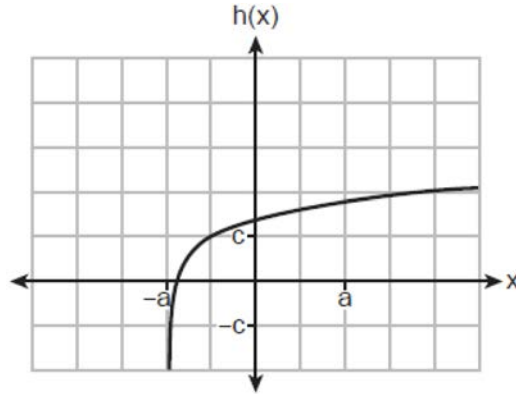
- 2 Which statement about the graph of $c(x) = \log_6 x$ is *false*?
 - 1) The asymptote has equation $y = 0$.
 - 2) The graph has no y -intercept.
 - 3) The domain is the set of positive reals.
 - 4) The range is the set of all real numbers.

- 3 Which statement below about the graph of $f(x) = -\log(x + 4) + 2$ is true?
 - 1) $f(x)$ has a y -intercept at $(0, 2)$.
 - 2) $-f(x)$ has a y -intercept at $(0, 2)$.
 - 3) As $x \rightarrow \infty, f(x) \rightarrow \infty$.
 - 4) $x \rightarrow -4, f(x) \rightarrow \infty$.

- 4 If $f(x) = \log_3 x$ and $g(x)$ is the image of $f(x)$ after a translation five units to the left, which equation represents $g(x)$?
 - 1) $g(x) = \log_3(x + 5)$
 - 2) $g(x) = \log_3 x + 5$
 - 3) $g(x) = \log_3(x - 5)$
 - 4) $g(x) = \log_3 x - 5$

- 5 The graph of $y = \log_2 x$ is translated to the right 1 unit and down 1 unit. The coordinates of the x -intercept of the translated graph are
 - 1) $(0, 0)$
 - 2) $(1, 0)$
 - 3) $(2, 0)$
 - 4) $(3, 0)$

6 Which equation best represents the graph below?



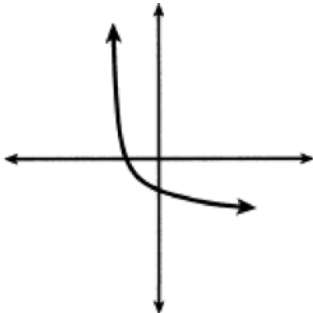
1) $h(x) = \log(x + a) + c$

2) $h(x) = \log(x - a) + c$

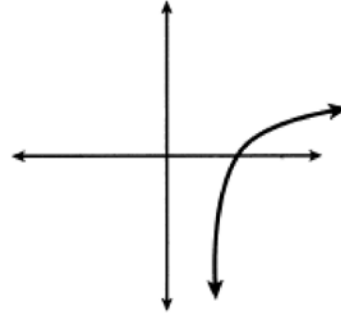
3) $h(x) = \log(x + a) - c$

4) $h(x) = \log(x - a) - c$

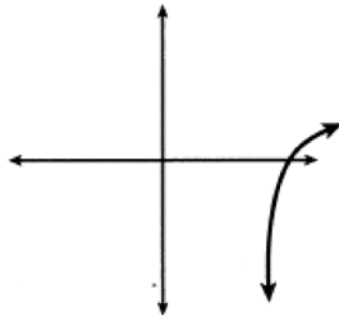
7 Which sketch could represent the function $m(x) = -\log_{100}(x - 2)$?



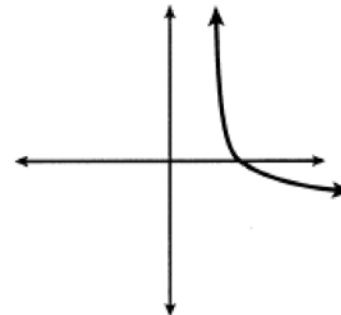
1)



3)



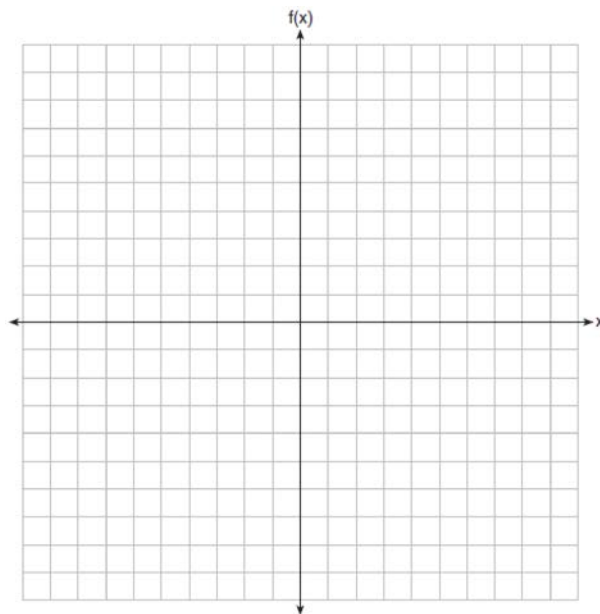
2)



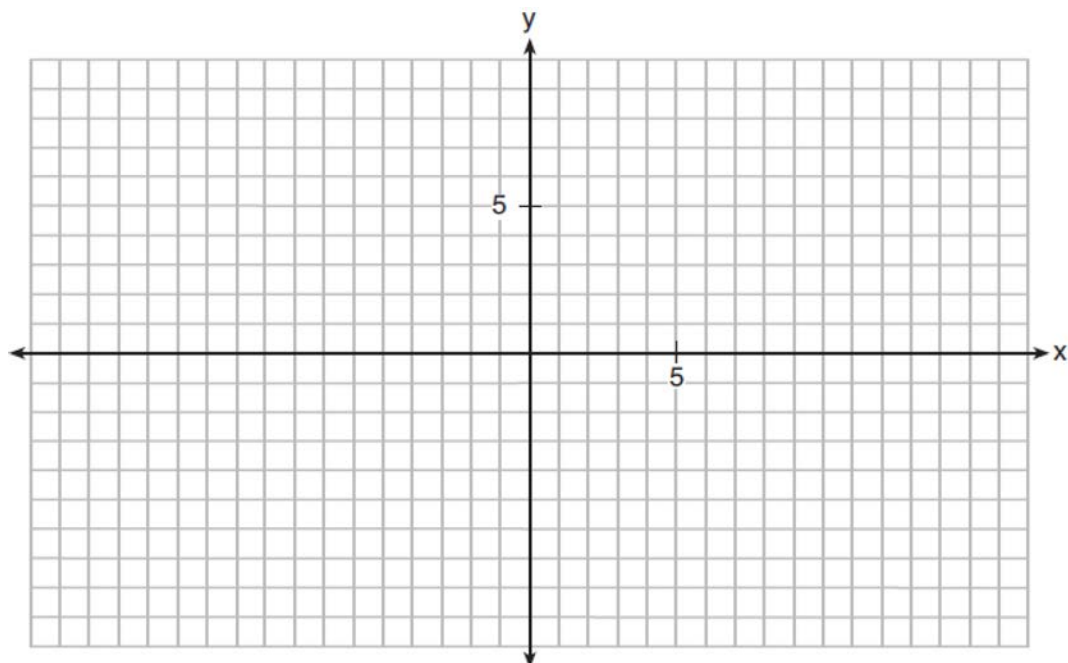
4)

8 Describe the translations that map $f(x) = \log x$ to $g(x) = \log(x + 3) - 5$.

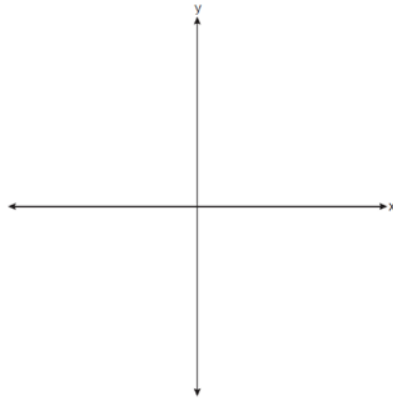
- 9 Graph $f(x) = \log_2(x + 6)$ on the set of axes below.



- 10 On the grid below, graph the function $y = \log_2(x - 3) + 1$

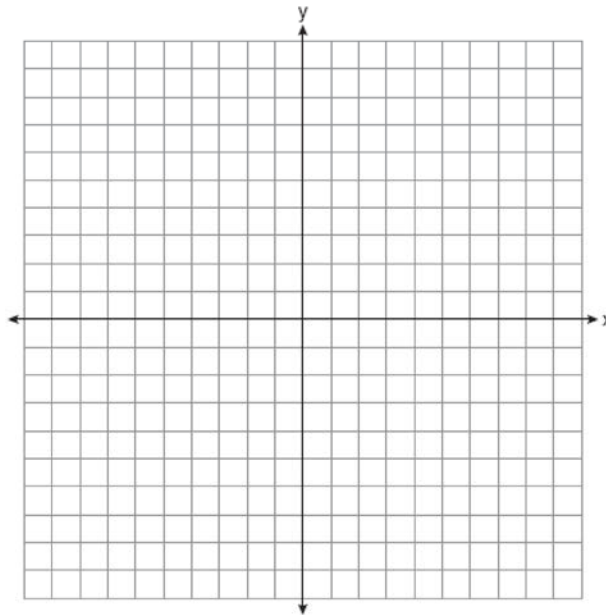


- 11 Sketch $p(x) = -\log_2(x + 3) + 2$ on the axes below.



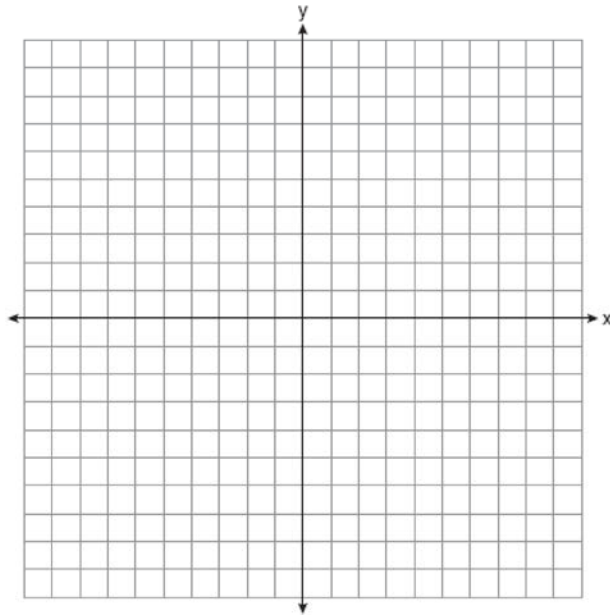
Describe the end behavior of $p(x)$ as $x \rightarrow -3$. Describe the end behavior of $p(x)$ as $x \rightarrow \infty$

- 12 Graph $y = \log_2(x + 3) - 5$ on the set of axes below. Use an appropriate scale to include *both* intercepts.



Describe the behavior of the given function as x approaches -3 and as x approaches positive infinity.

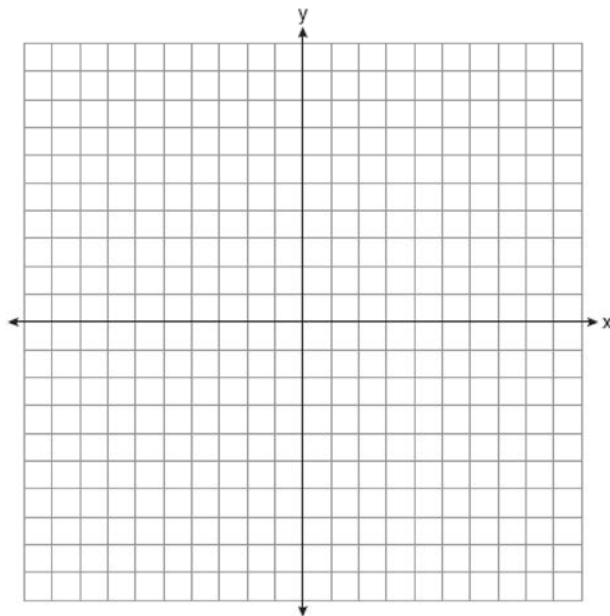
- 13 Graph $y = f(x)$, where $f(x) = \log_2(x - 1) + 3$ on the set of axes below.



State the equation of the asymptote of $f(x)$. When $f(x)$ is reflected over the line $y = x$, a new function is formed: $g(x) = 2^{x-3} + 1$. State the equation of the asymptote of $g(x)$.

- 14 Graph the following function on the axes below.

$$f(x) = \log_3(2 - x)$$



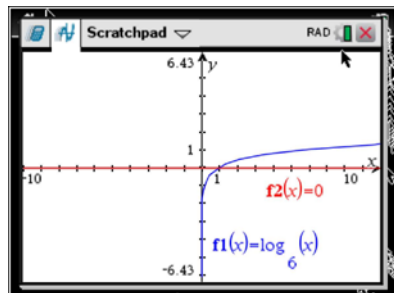
State the domain of f . State the equation of the asymptote.

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Answer Section

1 ANS: 2 REF: 082409aai

2 ANS: 1



REF: 061618aai

3 ANS: 4 REF: 062215aai

4 ANS: 1 REF: 011902aai

5 ANS: 4

$$\log_2(x-1) - 1 = 0$$

$$\log_2(x-1) = 1$$

$$x-1 = 2^1$$

$$x = 3$$

REF: 061819aai

6 ANS: 1 REF: 062308aai

7 ANS: 4

Translate the parent log function 2 to the right and reflect over the x -axis.

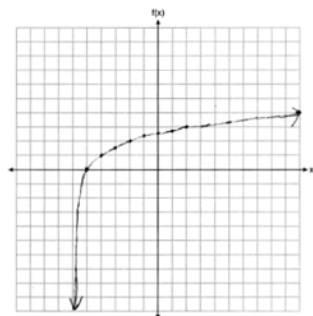
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8 ANS:

left 3, down 5

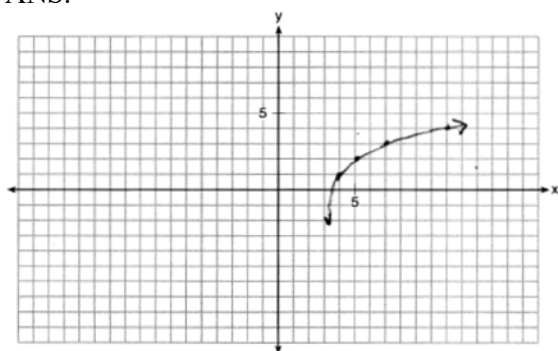
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9 ANS:



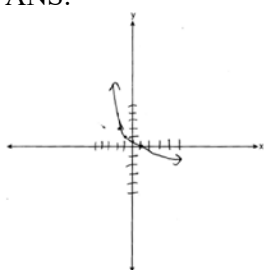
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10 ANS:



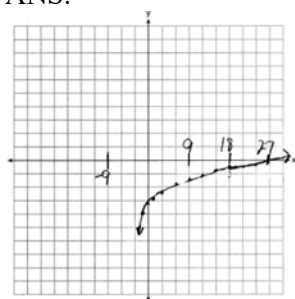
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11 ANS:

As $x \rightarrow -3, y \rightarrow \infty$. As $x \rightarrow \infty, y \rightarrow -\infty$.

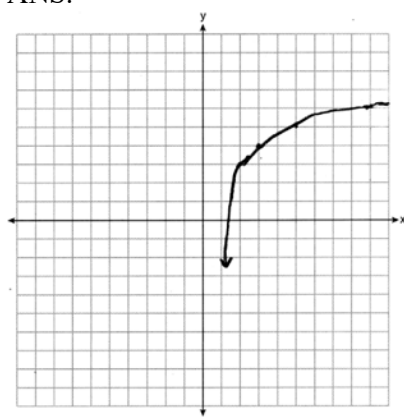
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12 ANS:

As $x \rightarrow -3, y \rightarrow -\infty$. As $x \rightarrow \infty, y \rightarrow \infty$.

REF: 061735aII

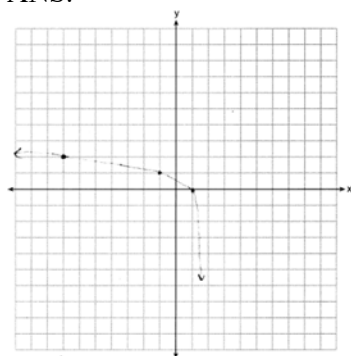
13 ANS:



$$x = 1, y = 1$$

REF: 062436aii

14 ANS:

Domain: $x < 2$, Asymptote $x = 2$

REF: 012034aii