9.4

SM3 Graphing Logarithmic Functions 2019-2020

Name _____ **Date** _____ **Period** _____

1. The domain of a logarithmic function $f(x)=\log_a x$ is _____.

2. The graph of every logarithmic function $f(x)=\log_a x$, where $a > 0$, and $a \neq 1$, passes through three points:

_____ , _____ , and _____ .

3. **True or False**: If $y=\log_a x$, then $y=a^x$.

4. **True or False:** The graph of $f(x)=\log_a x$, where $a > 0$, and $a \neq 1$, has an x-intercept equal to 1 and no y-intercept.

Find the domain of each function. Write the answers in interval notation. SHOW WORK!

5. $f(x)=\ln(x-3)$

6. $f(x)=3-2\log_4\left[\frac{x}{2}-5\right]$

7. $g(x)=\log_5(2x+8)$

8. $g(x)=\ln(-x-2)$

Use the given function *f* to:

(*a*) Find the domain of *f* and any asymptotes of *f*. (b) Write the transformations. (c) Graph *f*. (d) From the graph determine the range.

Use transformations and a table of values for at least 3 key points to get the graphs. <u>No graphing calculators!</u>

9. $f(x) = \ln(x+4)$

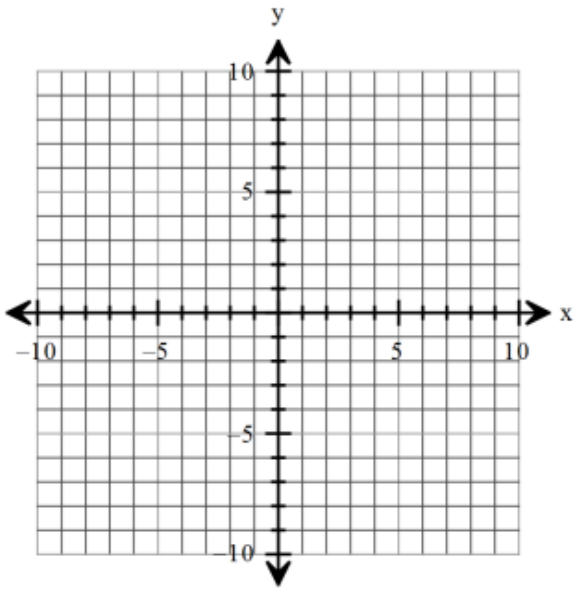
Domain: _____

Asymptotes:_____

Key points and transformations:

x	$f(x)$

x	$f(x)$



Range: _____

10. $f(x) = \log(-x)+3$

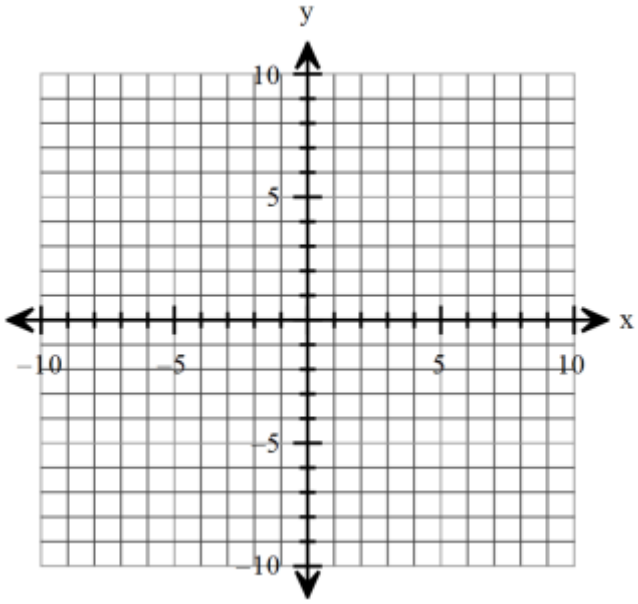
Domain: _____

Asymptotes:_____

Key points and transformations:

x	$f(x)$

x	$f(x)$



Range: _____

11. $f(x) = \ln[-(x+2)]$

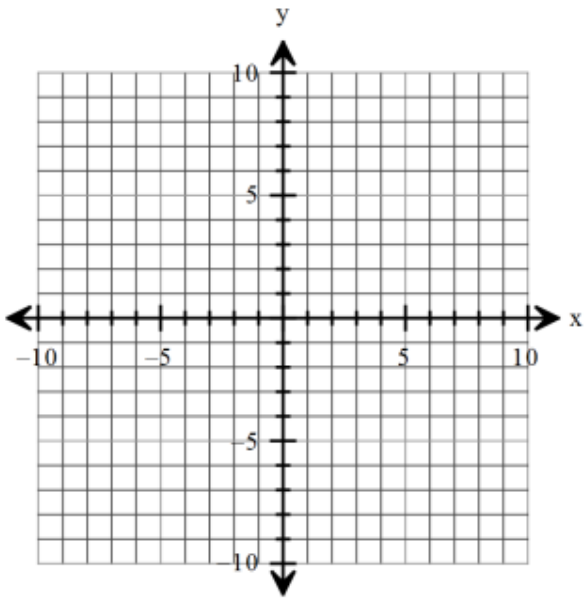
Domain: _____

Asymptotes:_____

Key points and transformations:

x	$f(x)$

x	$f(x)$



Range: _____

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

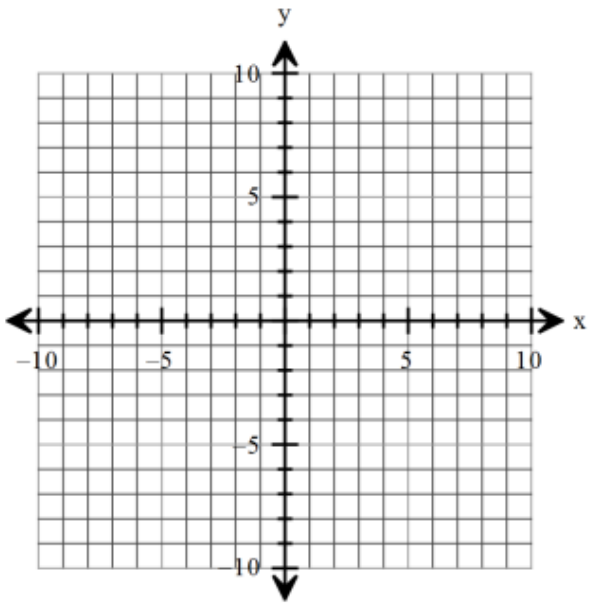
Domain: _____

Asymptotes:_____

Key points and transformations:

x	$f(x)$

x	$f(x)$



Range: _____

13. $f(x) = -2\log_3(x-5)$

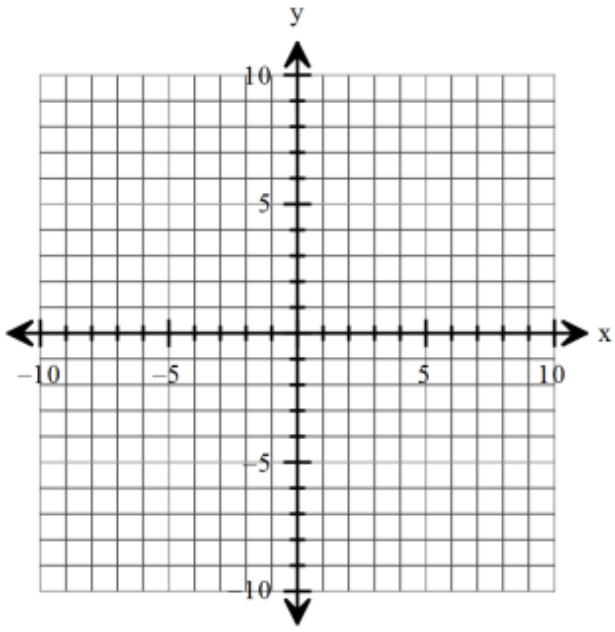
Domain: _____

Asymptotes:_____

Key points and transformations:

x	$f(x)$

x	$f(x)$



Range: _____

14. $f(x) = \log_3(x-4)+2$

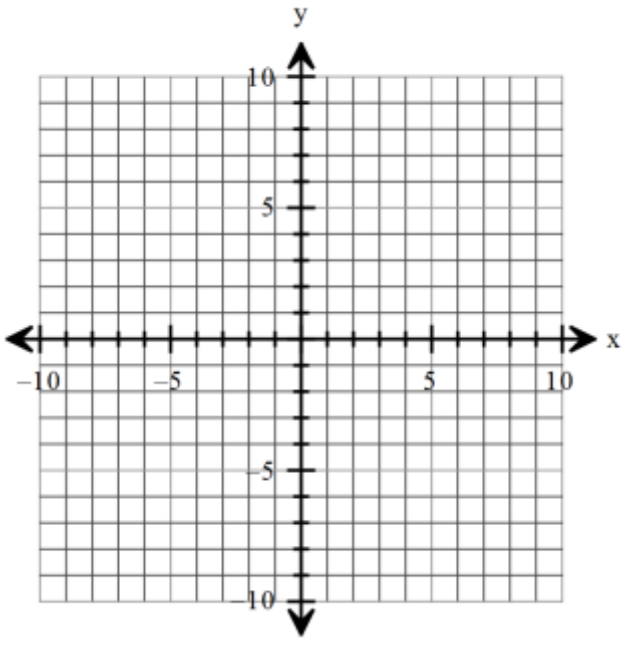
Domain: _____

Asymptotes:_____

Key points and transformations:

x	$f(x)$

x	$f(x)$



Range: _____

15. $f(x)=3\log_2(-x)$

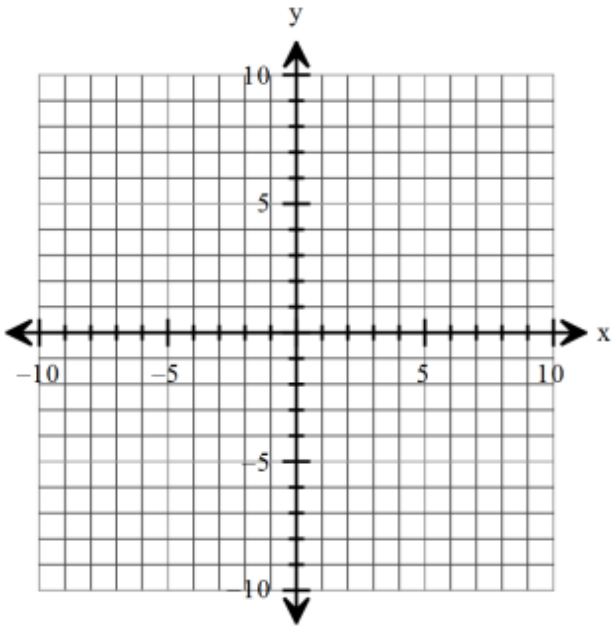
Domain: _____

Asymptotes:_____

Key points and transformations:

x	$f(x)$

x	$f(x)$



Range: _____

16. $f(x)=-4^{(x+2)}$

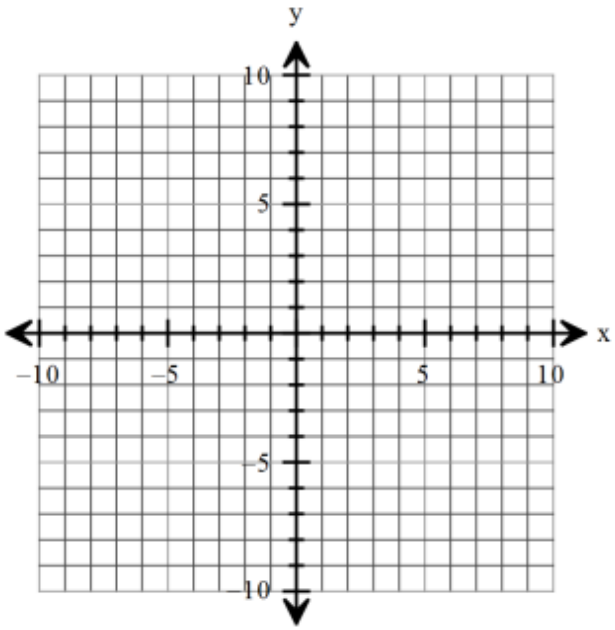
Domain: _____

Asymptotes:_____

Key points and transformations:

x	$f(x)$

x	$f(x)$



Range: _____