Precalculus

Name_____ Date_____ Per_____

Rewrite each exponential statement as an equivalent statement involving a logarithm.

1. $a^3 = 2.7$

2. $9 = 3^2$

3. $e^{2.2} = M$

4. $10^n = w$

Rewrite each logarithmic statement as an equivalent statement involving an exponent.

5. $\log_2 8 = 3$

6. $\log_3 12 = x$

7. $\ln 5 = x$

8. $\log y = 3$

Find the exact value of each logarithm without using a calculator.

9. $\log_2 16$

10. $\log_4 1$

11. $\log_6\left(\dfrac{1}{36}\right)$

12. $\log_{49} 7$

13. $\log_2 2^{-13}$

14. $2^{\log_2 7}$

15. $\log_4 4$

16. $\ln \sqrt[4]{e}$

17. $e^{\ln 6}$

18. $\log_6 1$

19. $10^{\log(x+4)}$

20. $\log 10,000$

21. $e^{\ln(0.5)}$

22. $\log_5 \sqrt[3]{25}$

23. $\log_6 \dfrac{1}{\sqrt[3]{36}}$

24. $\ln \dfrac{1}{e}$

25. $\log 10^{-4}$

26. $\log \sqrt[3]{10}$

27. $e^{\ln\left(\frac{1}{5}\right)}$

28. $\ln e^3$

29. $10^{\log 14}$

30. $\ln e$

31. $10^{\log(5)}$

32. $\log_2 32$

33. $\ln 1$

34. $\log_7 7$

35. $\ln \dfrac{1}{\sqrt{e^7}}$

Find the domain of each function.

36. $f(x) = 3 - 4\ln\left(\dfrac{x}{2} - 5\right)$ 37. $f(x) = \log_5(6 - x)$ 38. $g(x) = 2\log_3(3x + 2) - 6$

In problems 39-46, the graph of an logarithmic function is given. Match each graph to one of the following functions.

(A) $y = \log_3 x$ (B) $y = \log_3(-x)$ (C) $y = -\log_3 x$ (D) $y = -\log_3(-x)$
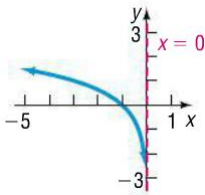
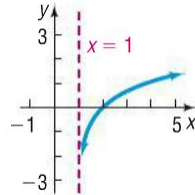(E) $y = \log_3 x - 1$ (F) $y = \log_3(x - 1)$ (G) $y = \log_3(1 - x)$ (H) $y = 1 - \log_3 x$
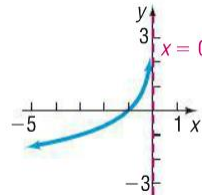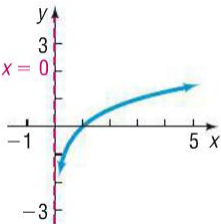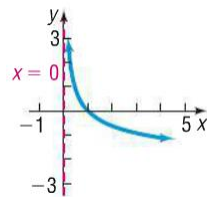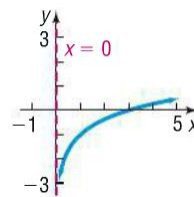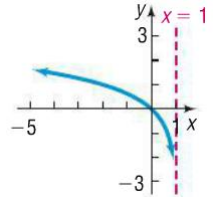
39.

40.

41.

42.
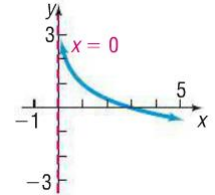
43.

44.

45.

46.

Use the given function f to:
(a) Find the domain of f.
(b) Find the vertical asymptote.
(c) Make an x, y table with at least three points.
(d) Write the transformations.
(e) Graph f.
(f) 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>
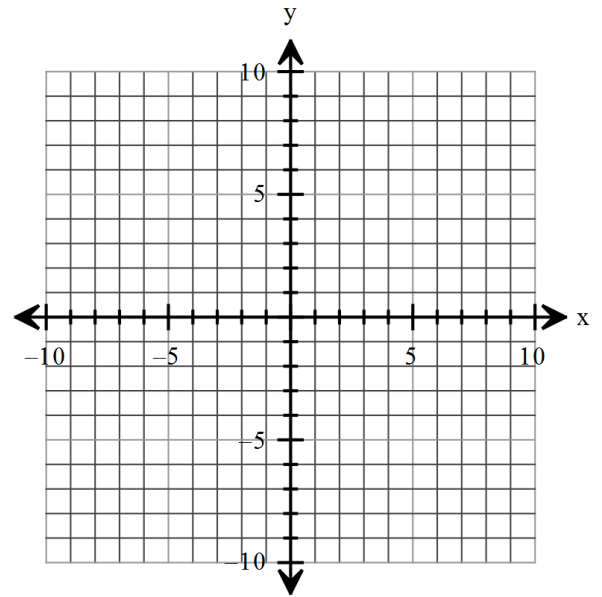
47. $f(x) = \log_3(x-4)+2$

a) domain _____

b) vertical asymptote _____

c)

x	$f(x)$

d) List the transformations

x	$f(x)$

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

a) domain _____

b) vertical asymptote _____

c)

x	$f(x)$

d) List the transformations

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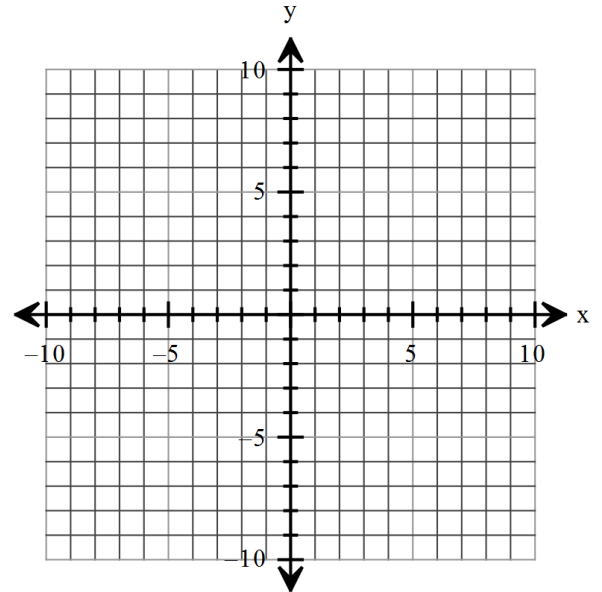
49. $f(x) = \ln(x+4)$

a) domain _____

b) vertical asymptote _____

c)

x	f(x)

d) List the transformations

x	f(x)
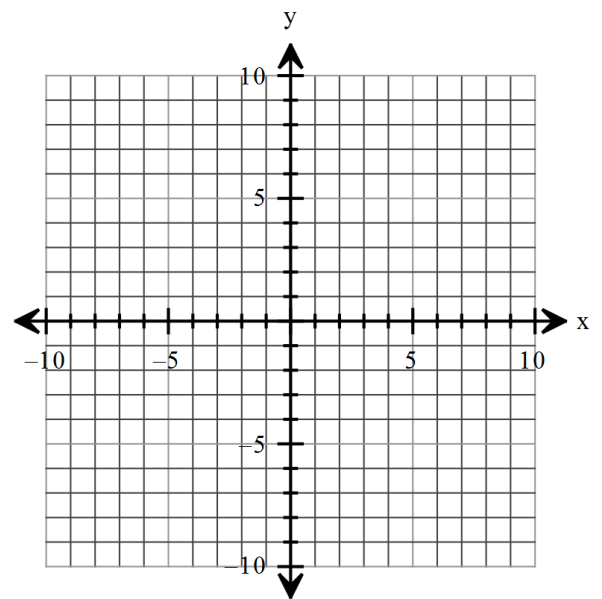
50. $f(x) = \log_{1/2}(x-2)$

a) domain _____

b) vertical asymptote _____

c)

x	f(x)

d) List the transformations

x	f(x)
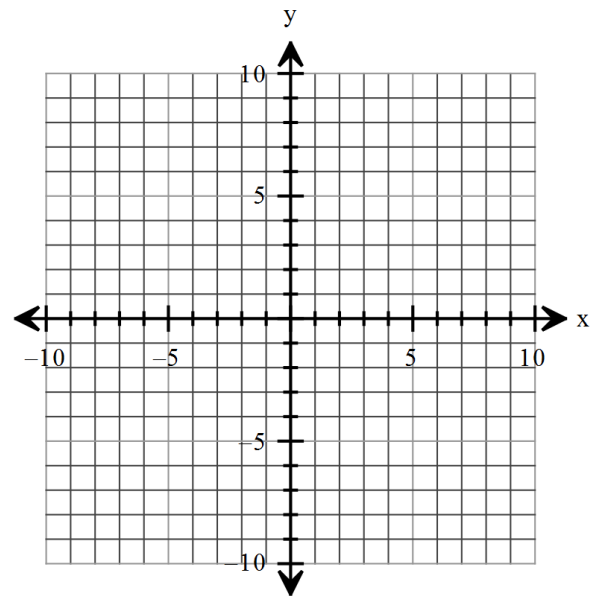
51. $f(x) = \dfrac{1}{2}\log_3(x+4) - 5$

a) domain _____

b) vertical asymptote _____

c)

x	$f(x)$

d) List the transformations

x	$f(x)$
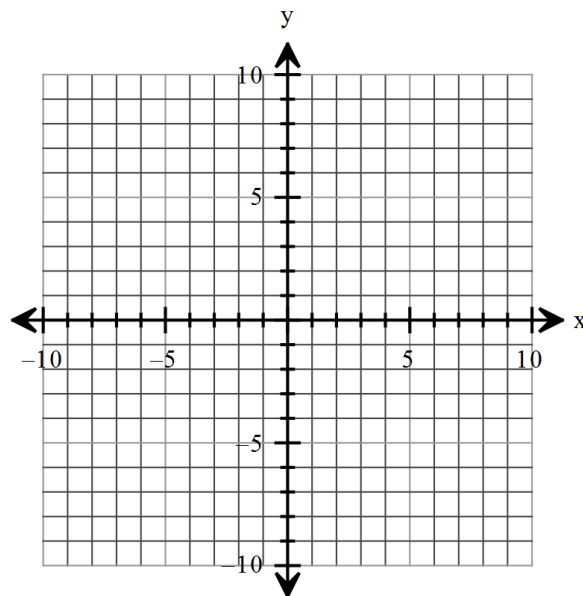
52. $f(x) = -\log_4(2x)$

a) domain _____

b) vertical asymptote _____

c)

x	$f(x)$

d) List the transformations

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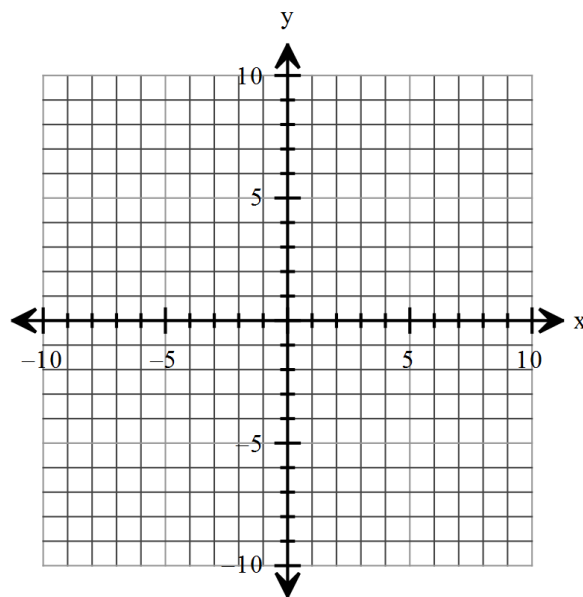
53. $f(x) = 3\log_2(-x)$

a) domain _____

b) vertical asymptote _____

c)

x	$f(x)$

d) List the transformations

x	$f(x)$

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

a) domain _____

b) vertical asymptote _____

c)

x	$f(x)$

d) List the transformations

x	$f(x)$