

Review

SM3 Test Review Unit 11

Name _____ Date _____ Period _____

Evaluate the logarithm without a calculator. Show work!

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

2. $10^{\log 5}$

3. $\log 1000$

4. $\log_{21}\sqrt{21}$

5. $\ln\frac{1}{\sqrt{e}}$

6. $\log_7 343$

7. $\log_6 6^2$

8. $e^{\ln 20}$

9. $\log_8\frac{1}{64}$

10. $\ln e$

11. $\log_{12} 1$

Find the following using a calculator. Round to the nearest ten thousandths.

12. $\log 32$

13. $\ln 0.98$

14. $\log(-3)$

15. $5^{3.2}$

Rewrite as an exponential function.

16. $\log x = 4$

17. $\ln 5 = x$

18. $\log_3 243 = 5$

Rewrite as a logarithmic function.

19. $5^4 = 625$

20. $10^x = 100$

21. $e^2 = x$

Solve each function by making the bases the same. DO NOT use logarithms!

22. $2^{3x} = 8$

23. $3^{2x-1} = 3^5$

Describe how to transform the graph of the basic function $g(x)$ into the graph of the given function $f(x)$.

24. $g(x) = \ln x$; $f(x) = \ln(-x) - 7$

25. $g(x) = 2^x$; $f(x) = 3 \cdot 2^{x+3}$

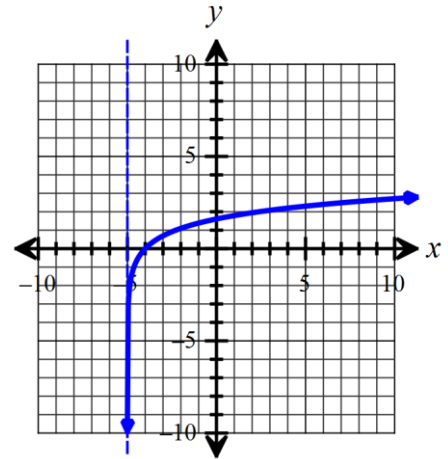
26. Determine the function that best describes the given graph.

a. $y = \ln x - 5$

c. $y = \ln x + 5$

b. $y = \ln(x - 5)$

d. $y = \ln(x + 5)$



Rewrite the expression as a sum or difference or multiple of logarithms.

27. $\log_2 \left(\frac{5x}{y} \right)$

28. $\log_8 \left(\frac{2x-3}{x^4} \right)$

Use the product, quotient and power rules of logarithms to rewrite the expression as a single logarithm.

Assume that all variables represent positive real numbers.

29. $\log_3 6 - \log_3 a$

30. $4\log x + 2\log y$

31. $2\log_4 3 + \log_4(x-5) - 7\log_4 x$

Write the change of base rule to find the logarithm to the nearest ten thousandths.

32. $\log_{3.4} 210$

33. $\log_4 3.8$

Use the change of base rule to write the expression using only natural logarithms.

34. $\log_5(a + b)$

Use the change of base rule to write the expression using only common logarithms.

35. $\log_4(4x)$

Solve each equation. Show work. Round to the nearest thousandths if necessary.

36. $\log_4 x = \frac{1}{2}$

37. $3e^{(2x-7)} = 8$

38. $\log_2(x + 2) = 5$

39. $\log\left(\frac{3}{5}x - 2\right) = 5$

40. $-10^{x-2} + 8 = -20$

41. $\log_5 4x = \log_5 10$

42. $\log_3(x + 4) - \log_3 4 = \log_3 22$

43. $\log_5 4 + \log_5(3x - 4) = 2$

44. $4^{(x-5)} + 4 = 9$

45. $5 - \ln x = 8$

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. No graphing calculators!

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

Domain:

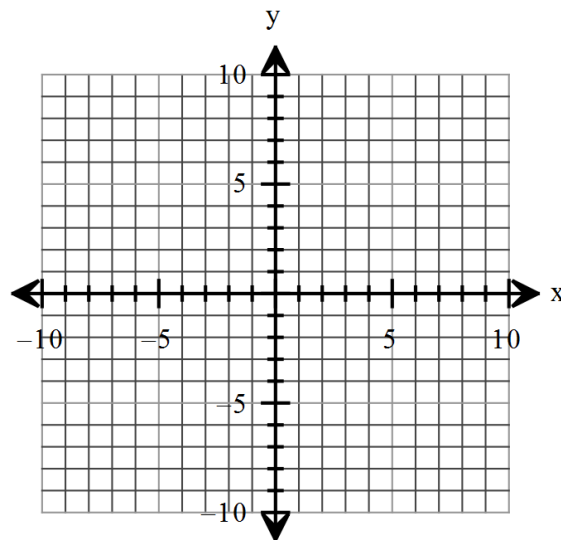
Asymptote:

Key points and transformations:

x	$f(x)$

x	$f(x)$

Range:



47. $f(x) = -3^x + 2$

Domain:

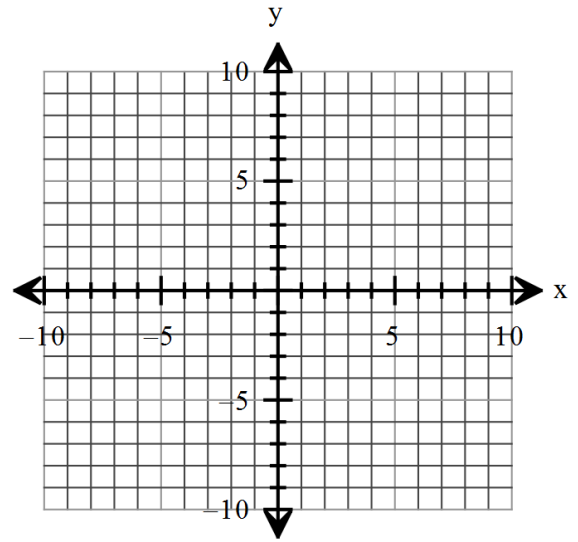
Asymptote:

Key points and transformations:

x	$f(x)$

x	$f(x)$

Range:



48. $f(x) = \log_2 x + 1$

Domain:

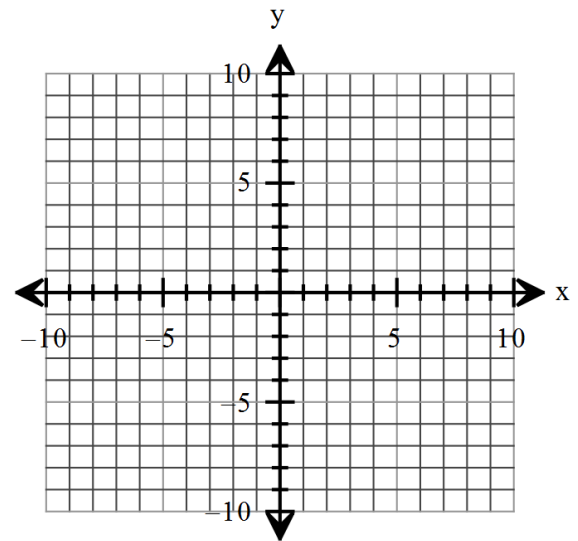
Asymptote:

Key points and transformations:

x	$f(x)$

x	$f(x)$

Range:



49. $f(x) = 2\log_3(x+1)$

Domain:

Asymptote:

Key points and transformations:

x	$f(x)$

x	$f(x)$

Range:

