SM3 Logarithm Review

Name _____ Date _____ Period_____

Rewrite the equation in exponential form.

1. $\log_2 32 = 5$

2. $\log_3 \dfrac{1}{9} = -2$

3. $\log_e 3 = x$

Solve. Show all work.

4. $\log_2 64 = x$

5. $\log_5 x = -3$

6. $\log_{32} x = \dfrac{1}{5}$

Rewrite the equation in logarithmic form.

7. $8^{-3} = \dfrac{1}{512}$

8. $x^3 = 216$

9. $10^x = \dfrac{1}{1000}$

Evaluate without a calculator. Show work.

10. $\log_4 64$

11. $\ln e^{-7}$

Evaluate to the nearest ten thousandths. (Use a calculator.)

12. $\log 27$

13. $\ln 19.05$

14. $\log -34$

Solve. Show all work.

15. $\log_4(x - 1) = 2$

16. $\log_3(-x^2 - 6x) = 2$

17. $\ln e^x = 10$

18. Use transformations and 3 key points to graph each function without a graphing calculator.

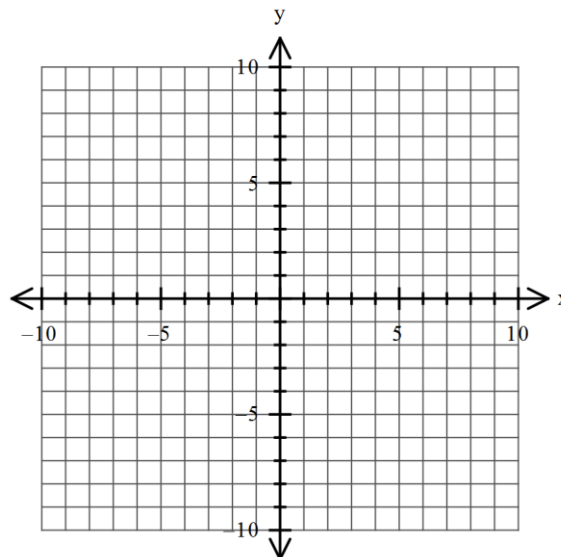$f(x) = -1 - \log(x - 4)$

Transformations:

Domain: Range:

Vertical asymptote:

Key points:

x	$f(x)$

x	$f(x)$

19. Use transformations and 3 key points to graph each function without a graphing calculator.

$$f(x)=3^{-x-2}+1$$

Transformations:

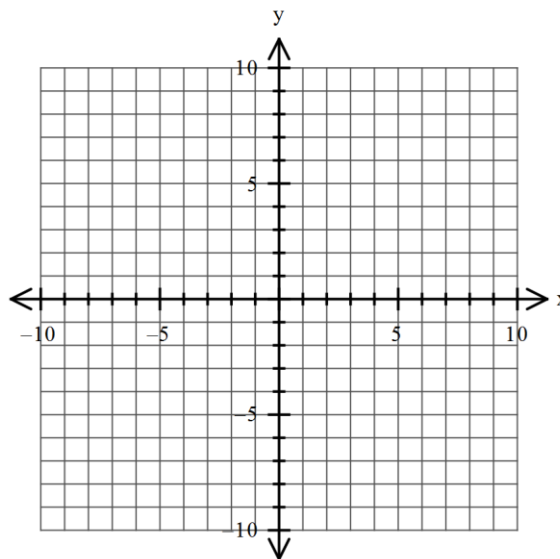Domain: Range:

Horizontal asymptote:

Key points:

x	$f(x)$

x	$f(x)$

Assuming x and y are positive, use properties of logarithms to write the expression as a sum or difference of logarithms with the exponent as a factor.

20. $\log x^4 y$

21. $\log \dfrac{x^2}{y}$

22. $\ln 2\sqrt{x}$

Assuming x and y are positive, use properties of logarithms to write the expression as single logarithm.

23. $\log y - 3\log x$

24. $9\log_7 x + 8\log_7 y$

25. $\ln(x+6)+\ln(3x-4)$

Rewrite using change of base formula. Then use your calculator to evaluate the logarithm to the nearest ten thousandths.

26. $\log_3 13$

27. $\log_{\sqrt 5} 3$

28. $\log_\pi 9$

Use properties of logarithms to find the exact value of each expression. (Do not use a calculator).

29. $\log_{11} 22 - \log_{11} 2$

30. $2^{\log_2 5+\log_2 3}$

31. $\log_6 2 + \log_6 18$