

Name:

Date:

Period:

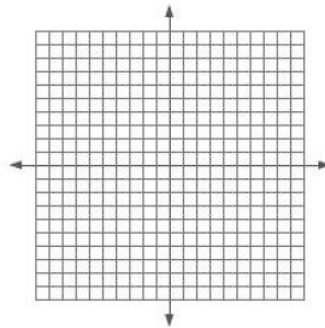
Chapter 4 Practice Test **NO CALCULATORS ALLOWED**

1. Graph the function $y = 4^x$. State the domain, range, and asymptote.

Domain:

Range:

Asymptote:

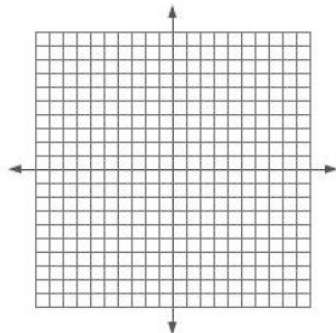


2. Graph the function $y = \log_4 x$. State the domain, range, and asymptote.

Domain:

Range:

Asymptote:

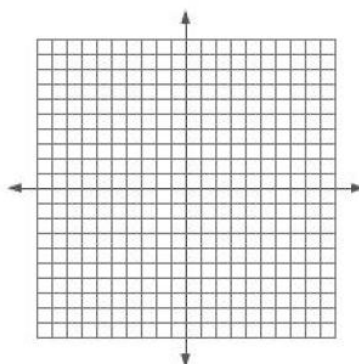


3. Graph the function $y = 4^{(x-1)} + 1$. State the domain, range, and asymptote.

Domain:

Range:

Asymptote:

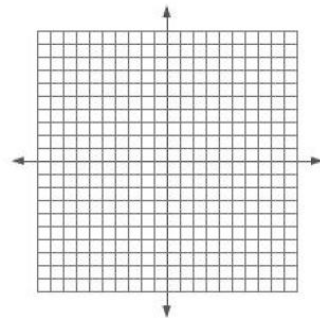


4. Graph the function $y = 4^x - 3$. State the domain, range, and asymptote.

Domain:

Range:

Asymptote:

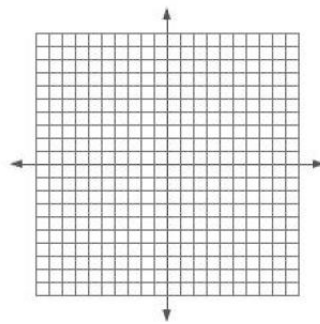


5. Graph the function $y = e^x$. State the domain, range, and asymptote.

Domain:

Range:

Asymptote:



6. Evaluate the expression $\log_2 0.25$.

7. Evaluate the expression $\log_{\frac{1}{2}} 8$.

8. Evaluate the expression $\log_2 1$.

9. Evaluate the expression $\ln e^2$.

Calculators Allowed

10. Simplify the expression $(-e^2)(-e^{-3})$.

11. Simplify the expression $(3e)^2$.

12. Simplify the expression $\log_2 32$.

13. Simplify the expression $\log \frac{1}{1000}$.

14. Simplify the expression $\frac{4e^4}{e^5} \cdot \frac{e}{-2}$.
15. Solve the equation $\log_5 x = 4$. Check for extraneous solutions.
16. Solve the equation $10^{x^2+1} = 100,000$. Check for extraneous solutions.
17. Solve the equation $3e^{-x} - 4 = 9$. Check for extraneous solutions.
18. Solve the equation $\ln(x+5) = \ln(x-1) - \ln(x+1)$. Check for extraneous solutions.
19. Find the inverse of the function $y = \log_8 x$.
20. Find the value of the expression $\log_8 1000$. Round your result to three decimal places.
21. Find the value of the expression $\log 15$. Round your result to three decimal places.
22. Condense the expression $\log_4 3 + 3\log_4 2$.
23. Expand the expression $\ln \frac{2y}{x}$.
24. Use the change of base formula to evaluate the expression $\log_7 125$. Round your result to three decimal places.
25. Solve the exponential inequality $27\left(\frac{2}{3}\right)^x \leq \frac{16}{3}$.

26. Solve the logarithmic inequality $\log_6 x + 4 < 5$.
27. The value of a new car purchased for \$20,000 decreases by 10% per year. Write an exponential model for the value of the car. Use the model to estimate the value after three years.
28. You deposit \$1000 in an account that pays 6% annual interest compounded continuously. Find the balance at the end of two years.
29. Find the inverse of $f(x) = \ln(x-4)$?
30. Expand $\log \frac{xy^3z^2}{r}$?
31. Write an expression that is equivalent to $\log_3 2$?
32. What is the solution of the equation $9^{x+1} = 27^{x-1}$?

Describe the characteristics of the following graphs:

- $y = ab^{x-h} + k$ Discuss how various values of a, b, h, and k translate the graph. Discuss the end behavior of the graph, domain, range, and asymptote. Be able to look at an equation of the function and determine if the function represents exponential growth or decay.
- $y = ae^{x-h} + k$ Discuss how various values of a, b, h, and k translate the graph. Discuss the end behavior of the graph, domain, range, and asymptote. Be able to look at an equation of the function and determine if the function represents an exponential growth or decay.
- $y = \log_b(x-h) + k$ Discuss the inverse of the graph, how the values of b, h, and k translate the graph. Discuss the end behavior of the graph, domain, range, and asymptote.