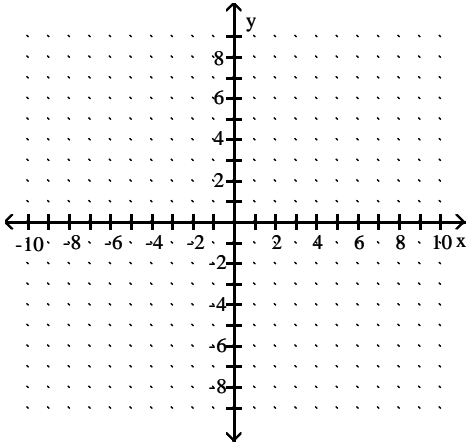


M122 Review

Graph the function.

1) $f(x) = 4^x$

1)



Find the function value.

2) Let $f(x) = 6^x$. Find $f(2)$.

2) _____

Write the logarithmic equation in exponential form.

3) $\log_{1/3} 81 = -4$

3) _____

Write in logarithmic form.

4) $7^2 = 49$

4) _____

Evaluate the logarithm, if possible. Round the answer to four decimal places.

5) $\log 245$

5) _____

Find the value of the logarithm without using a calculator.

6) $\log_6 \frac{1}{36}$

6) _____

Find the inverse of the function.

7) $f(x) = 2^x$

7) _____

Solve the equation.

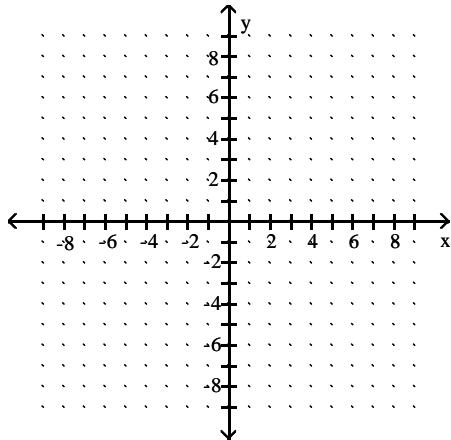
8) $\log_2 \frac{1}{4} = x$

8) _____

Graph the function.

9) $y = \log_5 x$

9) _____



Solve the problem.

- 10) Use the formula $R = \log(I/I_0)$, where the magnitude of an earthquake on the Richter scale is based on I , the measurement of a seismic wave, and I_0 , the measurement of a seismic wave of a level zero earthquake with the same epicenter. An earthquake was recorded which was 50,119 times more powerful than a reference level zero earthquake. What is the magnitude of this earthquake? (Round to the nearest tenth.) 10) _____

Solve the equation.

- 11) $21^x = 58$ (Round to two decimal places.) 11) _____

Use the properties of logarithms to evaluate the expression.

- 12) $10^{\log t}$ 12) _____

- 13) Given $\log_x 3 = a$ and $\log_x 5 = b$ find $\log_x 75$. 13) _____

Solve the equation. Give an exact solution.

- 14) $\log_4(x - 7) + \log_4(x - 7) = 1$ 14) _____

Rewrite the expression as the sum and/or difference of logarithms, without using exponents.

Simplify if possible.

- 15) $\log_4 \frac{x^6 y^3}{3}$ 15) _____

Rewrite as a single logarithm.

16) $2 \log_2 (2x + 8) + 4 \log_2 (6x - 6)$ 16) _____

Use a change of base formula to evaluate the given logarithm. Approximate to three decimal places.

17) $\log_{\sqrt{6}} (64.7)$ 17) _____

Solve the inequality.

18) $3^x > 27$ 18) _____

Solve the problem.

19) The sales of a mature product (one which has passed its peak) will decline by the function $S(t) = S_0 e^{-at}$, where t is time in years. Find the sales after 9 years if $a = 0.17$ and $S_0 = 77,900$. 19) _____

20) The decay of 907 mg of an isotope is given by $A(t) = 907e^{-0.03t}$, where t is time in years. Find the amount left after 50 years. 20) _____

Find the exponential function that satisfies the given conditions.

21) Initial value = 56, decreasing at a rate of 0.41% per week 21) _____

Solve the problem.

22) Find the amount of money in an account after 10 years if \$4200 is deposited at 6% annual interest compounded semiannually. 22) _____

23) \$9000 is invested at 8% compounded quarterly. In how many years will the account have grown to \$14,500? Round your answer to the nearest tenth of a year. 23) _____

24) The natural resources of an island limit the growth of the population to a limiting value of 4803. The population of the island is given by the logistic equation 24) _____

$$P(t) = \frac{4803}{1 + 4.63e^{-0.31t}}$$

where t is the number of years after 1980. What is the population of the island in 1983?

25) Find the exponential function that models the data in the table below.
Round the coefficients to the nearest hundredth.

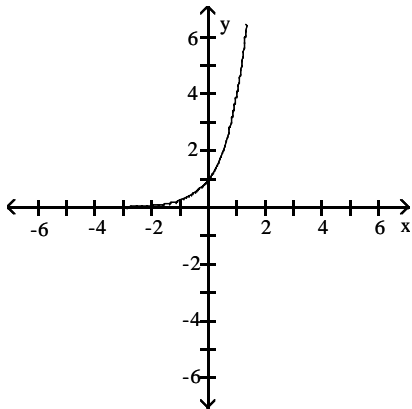
25) _____

x	1	2	3	4	5
y	4.0	4.8	6.2	7.8	9.9

Answer Key

Testname: CHAPTER 3

1)



2) 36

3) $\left(\frac{1}{3}\right)^{-4} = 81$

4) $\log_7 49 = 2$

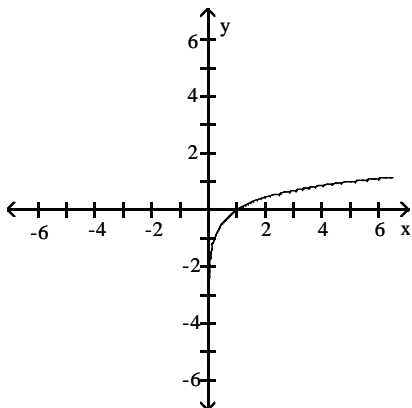
5) 2.3892

6) -2

7) $f^{-1}(x) = \log_2 x$

8) -2

9)



10) 4.7

11) 1.33

12) t

13) $a + 2b$

14) 9

15) $6 \log_4 x + 3 \log_4 y - \log_4 3$

16) $\log_2 (2x + 8)^2 (6x - 6)^4$

17) 4.654

18) $x > 3$

19) 16,868

Answer Key

Testname: CHAPTER 3

20) 202 mg

21) $f(t) = 56 \cdot 0.9959^t$

22) \$7585.67

23) 6 years

24) 1699 people

25) $f(x) = 3.11(1.26)^x$