

Print Name _____

SHORT ANSWER. Answer the question, including units in your answer if needed. Show work and circle your final answer.

Solve the exponential equation. Round to three decimal places when necessary.

1) $e^x - 5e^{-x} = 4$

1) _____

Tell whether or not the relation is a function.

2) $\{(-4,3), (-2,-6), (2,-9), (2,-2)\}$

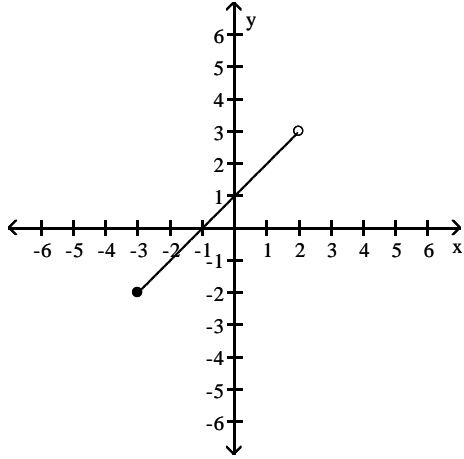
2) _____

3) $\{(-7,6), (-7,-3), (-1,1), (3,-1), (10,-8)\}$

3) _____

Find the domain and range of the function represented in the graph.

4)



4) _____

Find the oblique asymptote, if any, of the rational function.

5) $f(x) = \frac{x^2 + 5x + 5}{x + 6}$

5) _____

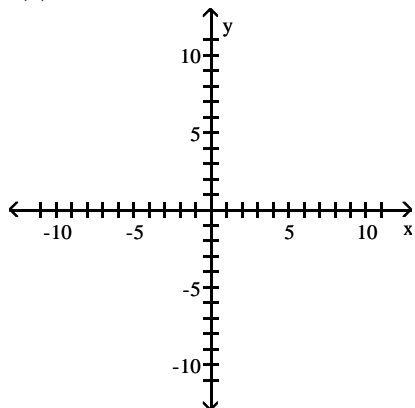
Express in terms of sums and differences of logarithms.

6) $\log \frac{5x^6}{y^7}$

6) _____

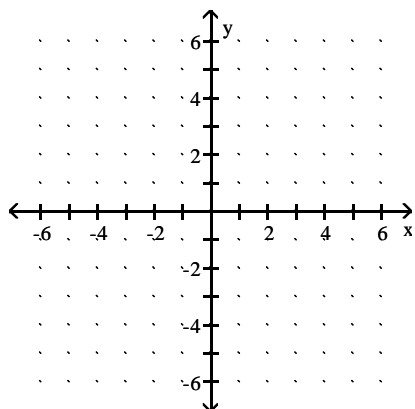
Graph the function.

7) $f(x) = x^2 - 3$



7) _____

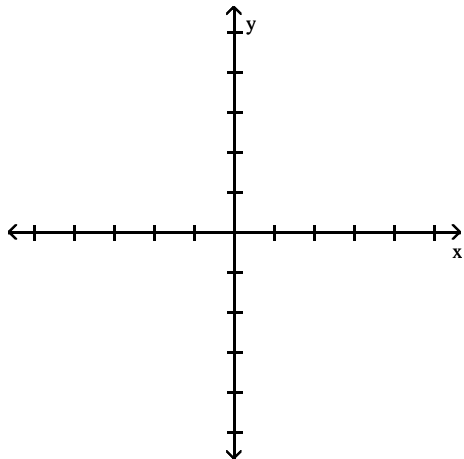
8) $f(x) = 5(4x - 2)$



8) _____

Determine whether the function is one-to-one by graphing and using the horizontal line test.

9) $f(x) = -x^3 + 2$



9) _____

Express as a single logarithm and, if possible, simplify.

10) $\log_a 71 + \log_a 4$

10) _____

Find the domain and the vertical asymptote of the function.

11) $f(x) = \log(x - 10)$

11) _____

Solve the logarithmic equation.

12) $\log_3(8x - 6) = 3$

12) _____

13) $\log(4 + x) - \log(x - 3) = \log 2$

13) _____

Find a rational function that satisfies the given conditions. Answers may vary, but try to give the simplest answer possible.

14) Vertical asymptotes $x = 2, x = 5$; x-intercept $\left(-\frac{7}{2}, 0\right)$

14) _____

Express as a difference of logarithms.

15) $\log_a \frac{G}{K}$

15) _____

Solve.

- 16) An open-top rectangular box has a square base and it will hold 256 cubic centimeters (cc).
Each side of the base has length x cm. The box's surface area S is given by

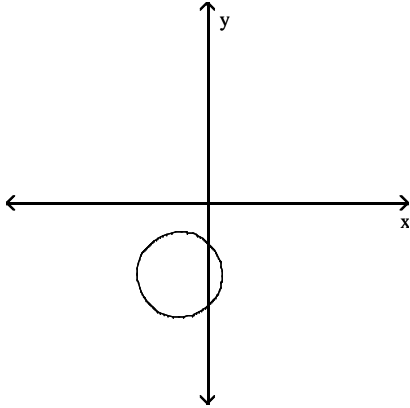
16) _____

$$S(x) = \frac{1024}{x} + x^2.$$

Estimate the minimum surface area and the value of x that will yield it.

Determine whether the graph is the graph of a function.

17)



17) _____

Use the compound-interest formula to find the account balance with the given conditions:

P = principal,

r = interest rate,

t = time, in years.

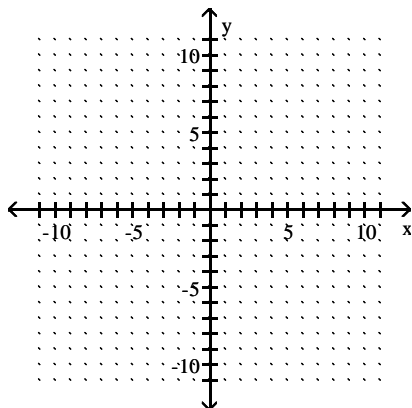
18) $P = \$1000$, $t = 6$, $r = 6\%$ compounded semiannually

18) _____

Sketch the graph of the function. Describe how the graph can be obtained from the graph of a basic logarithmic function.

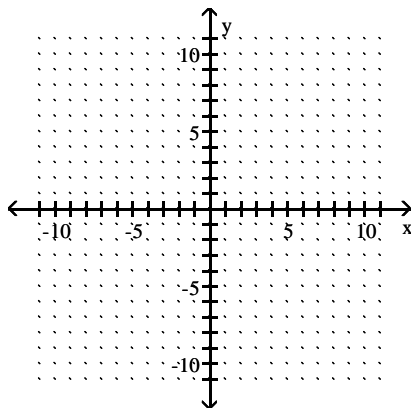
19) $f(x) = \log_4(x + 5)$

19) _____



20) $f(x) = \ln x + 2$

20) _____



Determine whether the given function is one-to-one. If it is one-to-one, find a formula for the inverse.

21) $f(x) = 2x + 1$

21) _____

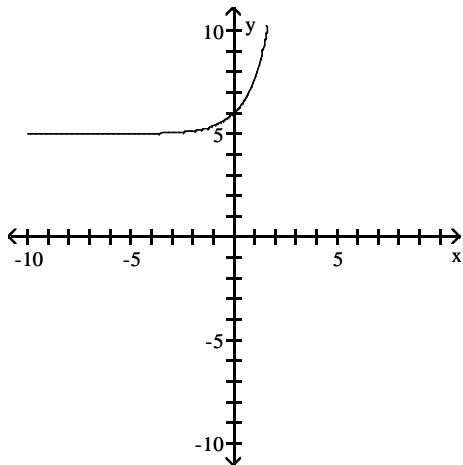
MULTIPLE CHOICE. Choose the answer that best completes the statement or answers the question. Write your choice on the blank provided to the right. Also, fill in your scantron answer sheet. There is only one correct answer per question. You may write on this paper. If a question appears to not have instructions, the instructions for the previous question apply. Good luck.

Match the function with one of the graphs.

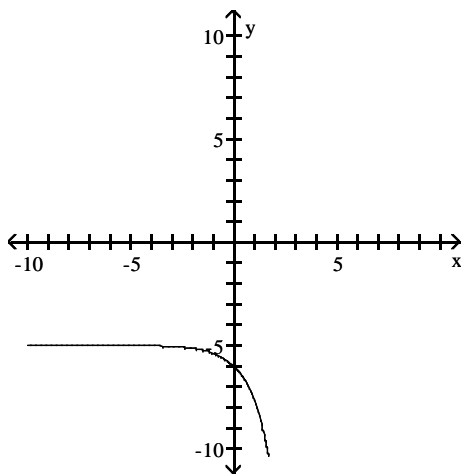
22) $f(x) = 5 + e^x$

22) _____

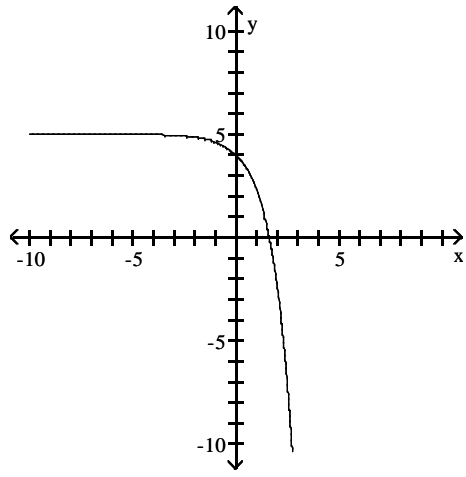
A)



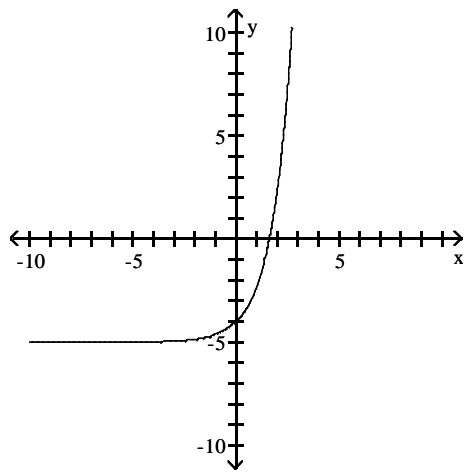
B)



C)



D)



Answer Key

Testname: 131_GRPREVASS_12_45_51THRU55

1) 1.609

Objective: (5.5) Solve Exponential Equation II

2) No

Objective: (1.2) Determine Whether Relation is a Function: Ordered Pairs (Y/N)

3) No

Objective: (1.2) Determine Whether Relation is a Function: Ordered Pairs (Y/N)

4) Domain: $[-3, 2)$; Range: $[-2, 3)$

Objective: (1.2) Find Domain and Range Given Graph

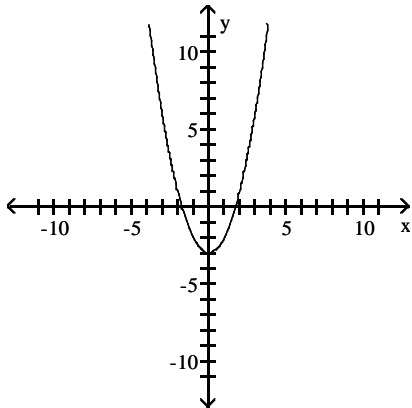
5) $y = x - 1$

Objective: (4.5) Find Oblique Asymptote of Rational Function

6) $\log 5 + 6 \log x - 7 \log y$

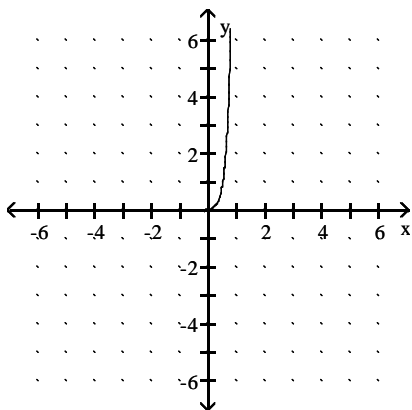
Objective: (5.4) Express Log as Sums and Differences of Logarithms

7)



Objective: (1.2) Graph Function

8)



Objective: (5.2) Graph Exponential Function

9) Yes

Objective: (5.1) Determine if Function is One-to-One by Graphing (Y/N)

10) $\log_a 284$

Objective: (5.4) Express as a Single Logarithm I

11) Domain $(10, \infty)$; vertical asymptote: $x = 10$

Objective: (5.3) Find Domain and Vertical Asymptote of Logarithmic Function

Answer Key

Testname: 131_GRPREVASS_12_45_51THRU55

12) $\frac{33}{8}$

Objective: (5.5) Solve Logarithmic Equation II

13) 10

Objective: (5.5) Solve Logarithmic Equation II

14) $f(x) = \frac{2x + 7}{x^2 - 7x + 10}$

Objective: (4.5) Find Rational Function Satisfying Conditions

15) $\log_a G - \log_a K$

Objective: (5.4) Express Log of Quotient as Difference of Logarithms

16) 192 cm^2 when $x = 8 \text{ cm}$

Objective: (4.5) Solve Apps: Rational Functions

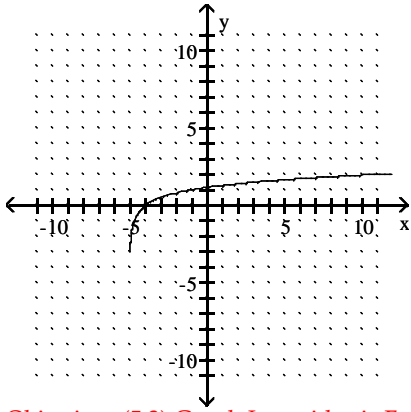
17) No

Objective: (1.2) Determine if Graph Represents a Function

18) \$1425.76

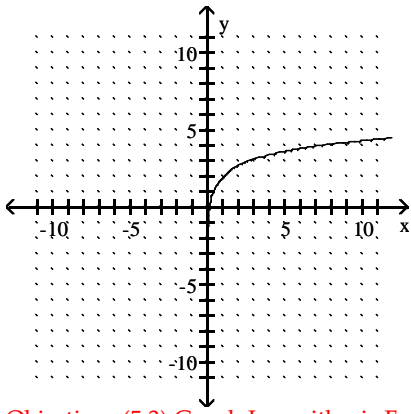
Objective: (5.2) Find Future Value (Compound Interest)

19) Shift $y = \log_4 x$ left 5 units



Objective: (5.3) Graph Logarithmic Function and Describe Transformation

20) Shift $y = \ln x$ up 2 units



Objective: (5.3) Graph Logarithmic Function and Describe Transformation

21) $f^{-1}(x) = \frac{x - 1}{2}$

Objective: (5.1) Find Equation of Inverse Function II

Answer Key

Testname: 131_GRPREVASS_12_45_51THRU55

22) A

Objective: (5.2) Match Function with Graph