

Student: _____
Date: _____
Time: _____

Instructor: Linda Gater
Course: College Algebra-Gater XA
Book: MML-CoCo: Martin-Gay
Prealgebra & Introductory Algebra, 3e

Assignment: Week 9 Chapter 9
Homework

1. If $f(x) = \sqrt{x}$ and $g(x) = x + 8$, find

- a. $(f + g)(x)$ b. $(f - g)(x)$
c. $(f \cdot g)(x)$ d. $\left(\frac{f}{g}\right)(x)$

a. $(f + g)(x) = \square$ (Type an exact answer, using radicals as needed.)

b. $(f - g)(x) = \square$ (Type an exact answer, using radicals as needed.)

c. $(f \cdot g)(x) = \square$ (Type an exact answer, using radicals as needed.)

d. $\left(\frac{f}{g}\right)(x) = \square$ (Type an exact answer, using radicals as needed.)

2. If $f(x) = x^2 - 6x + 2$ and $g(x) = -2x$, find the following composition.

$$(g \circ f)(-3)$$

$$(g \circ f)(-3) = \square$$

3. Determine whether the function is a one-to-one function. If it is one-to-one, list the inverse function by switching coordinates, or inputs and outputs.

$$f = \{(9,10), (4,6), (3,4), (8,7)\}$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ☐ A. The function f is one-to-one. The inverse $f^{-1} = \{\square\}$.
(Type ordered pairs. Use a comma to separate answers as needed.)
- ☐ B. The function f is not one-to-one.

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4. Given the one-to-one function $f(x) = x^3 + 3$, find the following. (Hint: You do not need to find the equation for f^{-1} .)

a. $f(1)$

b. $f^{-1}(4)$

a. $f(1) = \square$ (Type an integer or a decimal.)

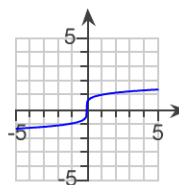
b. $f^{-1}(4) = \square$ (Type an integer or a decimal.)

5. Graph the equation on paper, and then choose the correct graph.

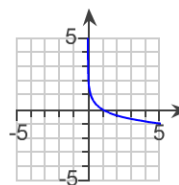
$$y = \left(\frac{1}{5}\right)^x$$

Choose the correct graph.

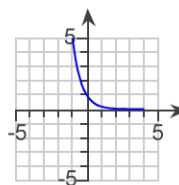
☐ A.



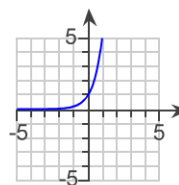
☐ B.



☐ C.



☐ D.

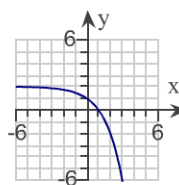


6. Graph the exponential function.

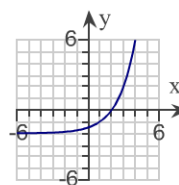
$$y = 2^x - 2$$

Choose the correct graph on the right.

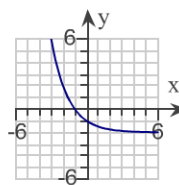
☐ A.



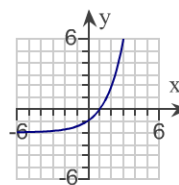
☐ B.



☐ C.



☐ D.



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7. Complete the table below using the exponential growth formula.

Original Amount	Growth Rate per Year	Number of Years, x	Final Amount after x Years of Growth
12	35%	30	

Original Amount	Growth Rate per Year	Number of Years, x	Final Amount after x Years of Growth
12	35%	30	<input type="text"/>

(Round to the nearest whole number as needed.)

8. Complete the table below using the exponential decay formula.

Original Amount	Decay Rate per Year	Number of Years, x	Final Amount after x Years of Decay
263,000	27%	24	

Original Amount	Decay Rate per Year	Number of Years, x	Final Amount after x Years of Decay
263,000	27%	24	<input type="text"/>

(Round to the nearest whole number as needed.)

9. Write as an exponential equation.

$$\log_{10} 10,000 = 4$$

The logarithm $\log_{10} 10,000 = 4$ written as an exponential equation is .

(Type an equation. Type your answer using exponential notation.)

10. Write as an exponential equation.

$$\log_5 \sqrt[5]{5} = \frac{1}{5}$$

The logarithm $\log_5 \sqrt[5]{5} = \frac{1}{5}$ written as an exponential equation is .

(Type an equation. Type your answer using exponential notation.)

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11. Write the sum as a single logarithm. Assume that variables represent positive numbers.

$$\log_4 x + \log_4 (x + 2)$$

$$\log_4 x + \log_4 (x + 2) = \boxed{}$$

(Simplify your answer.)

12. Write the difference as a single logarithm.

$$\log_3 30 - \log_3 5$$

$$\log_3 30 - \log_3 5 = \boxed{}$$

(Simplify your answer.)

13. Use a calculator to find the natural logarithm.

$$\ln 57$$

$$\ln 57 \approx \boxed{}$$

(Simplify your answer. Type an integer or a decimal rounded to four decimal places as needed.)

14. Use a calculator to find the natural logarithm.

$$\ln 18$$

$$\ln 18 \approx \boxed{}$$

(Simplify your answer. Type an integer or a decimal rounded to four decimal places as needed.)

15. Solve the equation. Give an exact solution and a four-decimal-place approximation.

$$3^{2x} = 26.7$$

The exact solution set is $\{\boxed{}\}$.

The approximate solution set is $\{\boxed{}\}$. (Round to four decimal places as needed.)