

MATH 1710 Unit 5 Review: Chapter 5 Spring 2014
MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Evaluate as instructed.

1. Use $f(x) = 3x + 4$ and $g(x) = x - x^2$ to evaluate $(f + g)(-2)$.
A) 12 B) 4 C) -4 D) -8

2. Use $f(x) = x^2$ and $g(x) = 2 - x$ to evaluate $(f - g)(3)$.
A) 0 B) -9 C) 10 D) 4

Use the given functions to find the requested function.

3. $f(x) = 3x + 6$, $g(x) = 5x^2$
Find $(fg)(x)$.
A) $15x^3 + 30x^2$ B) $15x^2 + 30x$ C) $5x^2 + 3x + 6$ D) $15x + 30$

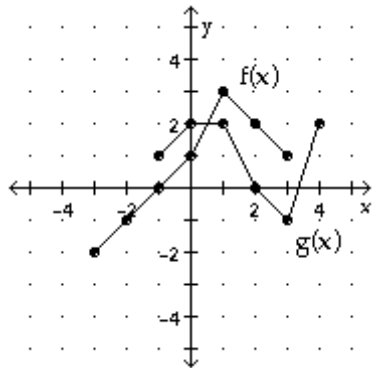
4. $f(x) = 6x + 9$, $g(x) = 3x^2$
Find $(f + g)(x)$.
A) $18x^3 + 27x$ B) $6x + 9 + 3x^2$ C) $\frac{6x+9}{3x^2}$ D) $6x + 9 - 3x^2$

5. $f(x) = 5x + 8$, $g(x) = 2x^2$
Find $(g - f)(x)$.
A) $5x + 8 - 2x^2$ B) $2x^2 - 5x - 8$ C) $3x^3 + 6x^2$ D) $2x^2 - 5x + 8$

6. $f(x) = 4x + 9$, $g(x) = 4x^2$
Find $(g/f)(x)$.
A) $16x^2 + 36x$ B) $\frac{4x^2}{4x+9}$ C) $4x^2 + 4x + 9$ D) $\frac{4x+9}{4x^2}$

Evaluate as instructed.

7. Evaluate $(f+g)(3)$.



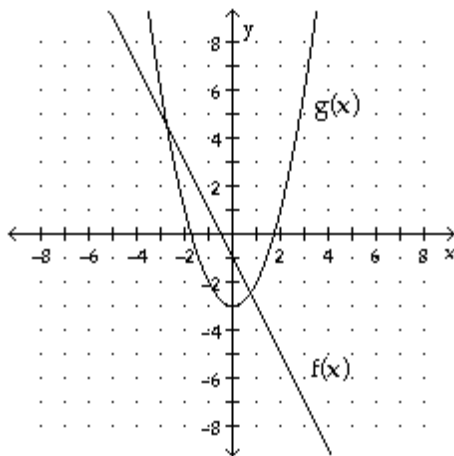
A) 1

B) -1

C) 0

D) 3

8. Evaluate $(fg)(-1)$.



A) -2

B) 3

C) -1

D) 0

Solve the problem.

9. Find $(f \circ g)(2)$ when $f(x) = 5x + 7$ and $g(x) = -1/x$.

A) $-\frac{17}{2}$

B) $-\frac{1}{17}$

C) $\frac{33}{2}$

D) $\frac{9}{2}$

10. Find $(f \circ g)(4)$ when $f(x) = -9x - 1$ and $g(x) = -6x^2 + 8x + 8$.

A) -66

B) -8502

C) -145

D) 503

Find the indicated composite for the pair of functions.

11. Given $f(x) = 7x + 15$ and $g(x) = 2x - 1$, find $(f \circ g)(x)$.

A) $14x + 22$

B) $14x + 8$

C) $14x + 29$

D) $14x + 14$

12. Given $f(x) = -6x + 6$ and $g(x) = 3x + 7$, find $(g \circ f)(x)$.

A) $-18x - 11$

B) $18x + 25$

C) $-18x + 48$

D) $-18x + 25$

Complete numerical representations for the functions f and g are given. Evaluate the expression, if possible.

13. $(f \circ g)(5)$

x	1	5	11	12
$f(x)$	-2	11	0	14

x	-5	-2	1	5
$g(x)$	1	-7	5	11

A) 0

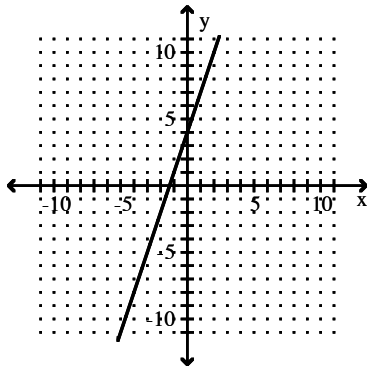
B) Undefined

C) 11

D) 5

Use the graph to determine whether the function is one-to-one.

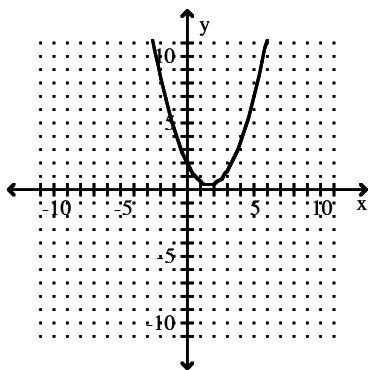
14.



A) Yes

B) No

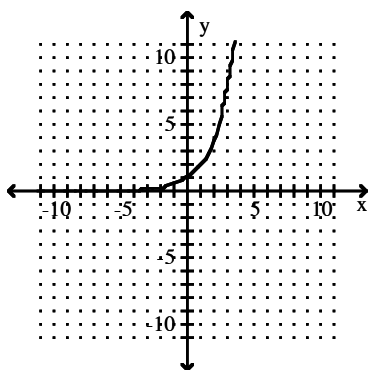
15.



A) Yes

B) No

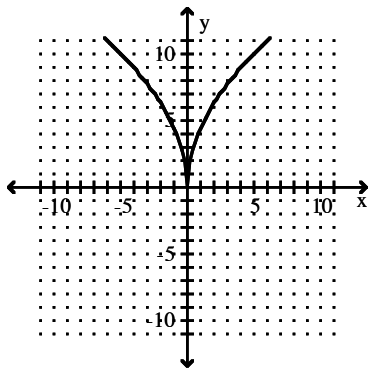
16.



A) No

B) Yes

17.



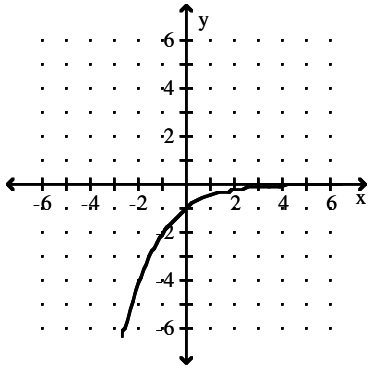
A) Yes

B) No

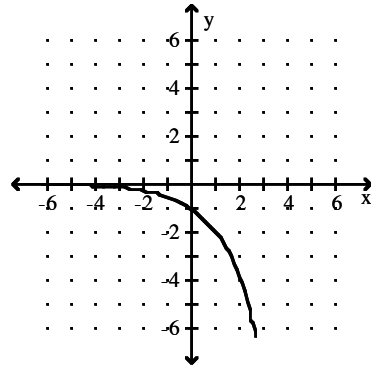
Graph the exponential function.

18. $y = 2^x$

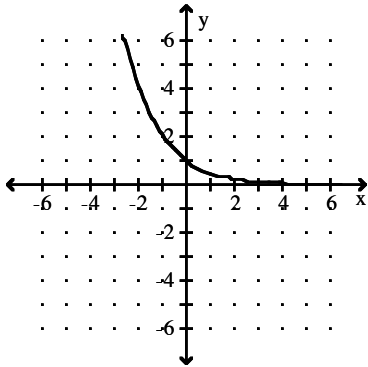
A)



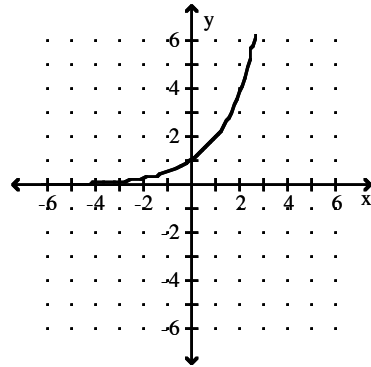
B)



C)



D)



Determine whether or not the function is one-to-one.

19. $f(x) = 7x + 2$

A) No

B) Yes

20. $f(x) = 4x^2 + 6$

A) Yes

B) No

21. $f(x) = x^3 - 4$

A) No

B) Yes

22. $f(x) = 8.35$

A) No

B) Yes

Find a symbolic representation for $f^{-1}(x)$.

23. $f(x) = 4x + 8$

A) Not a one-to-one function

B) $f^{-1}(x) = \frac{x+8}{4}$

C) $f^{-1}(x) = \frac{x-8}{4}$

D) $f^{-1}(x) = \frac{x}{4} - 8$

24. $f(x) = x^3 + 1$

A) Not a one-to-one function

B) $f^{-1}(x) = \sqrt[3]{x} - 1$

C) $f^{-1}(x) = \sqrt[3]{x+1}$

D) $f^{-1}(x) = \sqrt[3]{x-1}$

Find either a linear or an exponential function that models the data in the table.

25.

x	0	1	2	3	4
y	9	18	36	72	144

A) $f(x) = 9(2)^x$

B) $f(x) = \frac{1}{9}x + 9$

C) $f(x) = 2(9)^x$

D) $f(x) = 9x + 9$

26.

x	-2	-1	0	1	2
y	10	9.5	9	8.5	8

A) $f(x) = 9(0.5)^x$

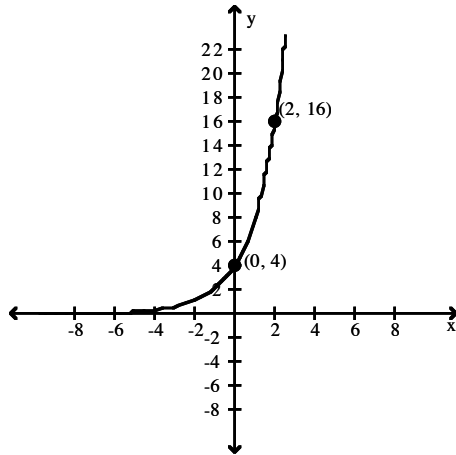
B) $f(x) = 0.5x + 9$

C) $f(x) = 9(8.5)^x$

D) $f(x) = -0.5x + 9$

Determine a formula for the exponential function.

27.



A) $f(x) = 16 \cdot 2^x$

B) $f(x) = 4 \cdot 16^x$

C) $f(x) = 4 \cdot 2^x$

D) $f(x) = 4 \cdot 0.5^x$

Use the compound interest formula to determine the final value of the given amount.

28. \$1,000 at 10% compounded annually for 5 years

A) \$1610.51

B) \$610.51

C) \$1771.56

D) \$1464.10

29. \$14,000 at 11% compounded semiannually for 4 years

A) \$21,485.61

B) \$7485.61

C) \$20,365.51

D) \$21,252.99

Evaluate the expression by hand, if possible.

30. $\log 100,000$

A) 5

B) 1

C) -5

D) 10

31. $\log 0.0001$

A) -1

B) 4

C) -10

D) -4

32. $\log 10,000 + \log 0.01$

A) 2

B) -2

C) -6

D) 6

33. $\log 0.00001 - \log 100$

A) 7

B) -7

C) -3

D) 3

34. $2 \log 0.001$

A) $-\frac{2}{3}$

B) 5

C) -1

D) -6

Evaluate the logarithm.

35. $\log_5 \left(\frac{1}{5} \right)$

A) 1

B) -1

C) 0

D) 5

36. $\log_5 \left(\frac{1}{25} \right)$

A) -5

B) 2

C) -2

D) 5

Expand the expression.

37. $\log_6 xy$

A) $\log_3 x + \log_3 y$

B) $\log_6 x - \log_6 y$

C) $\log_3 x - \log_3 y$

D) $\log_6 x + \log_6 y$

38. $\log_4 \frac{x^4 y^7}{5}$

A) $4 \log_4 x + 7 \log_4 y - \log_4 5$

B) $(4 \log_4 x)(7 \log_4 y) - \log_4 5$

C) $4 \log_4 x - 7 \log_4 y - \log_4 5$

D) $4 \log_4 x + 7 \log_4 y + \log_4 5$

Write the expression as one logarithm.

39. $\log_b z - \log_b b$

A) $\log_b \frac{z}{b}$

B) $\log_b z - b$

C) $\log_b \frac{b}{z}$

D) $\log_{2b} \frac{z}{b}$

Use the change of base formula to approximate the logarithm to four decimal places.

40. $\log_3 16.39$

A) 5.4633

B) 2.5456

C) 0.3928

D) 1.2146

Solve the problem.

41. Wind speed varies in the first twenty meters above the ground. For a particular day, let $f(x) = 7.3 \ln x + 4.3$ compute the wind speed x meters above the ground. At what height is the wind speed 11 meters per second? Round results to the nearest hundredth.

A) 0.40 B) 0.92 C) 2.51 D) 0.76

Use common or natural logarithms to solve the exponential equation symbolically.

42. $4^x = 16$

A) $x = \frac{\ln 16}{\ln 4}$ B) $x = \ln 4$ C) $x = \ln \frac{1}{4}$ D) $x = \ln 8$

Solve the logarithmic equation symbolically.

43. $\log x^9 = 3 + 7 \log x$

A) $x = 9 \cdot 10^{10}$ B) $x = \frac{10^3}{2}$ C) $x = 10^{10/9}$ D) $x = 10^{3/2}$

Solve the problem.

44. Suppose A_0 dollars is deposited in a savings account paying 7.5% interest compounded continuously. After x years the account will contain $A(x) = A_0 e^{0.075x}$ dollars. If \$390 is initially deposited, after how many years (to the nearest tenth) would the account have \$2690 in it?

A) 25.7 B) 0.9 C) 105.3 D) -25.7

45. One method to determine the time since an animal died is to estimate the percentage of carbon-14 remaining in its bones. The percent P in decimal form of carbon-14 remaining after x years is given by $P(x) = e^{-0.000121x}$. Approximate the percentage (to the nearest hundredth) of carbon-14 left after 2500 years.

A) 73.90% B) 50.00% C) 5.45% D) 18.35%

Answer Key

Testname: 1710 UNIT 5 REV 2014SP

1. D
2. C
3. A
4. B
5. B
6. B
7. C
8. A
9. D
10. D
11. B
12. D
13. A
14. A
15. B
16. B
17. B
18. D
19. B
20. B
21. B
22. A
23. C
24. D
25. A
26. D
27. C
28. A
29. A
30. A
31. D
32. A
33. B
34. D
35. B
36. C
37. D
38. A
39. A
40. B
41. C
42. A
43. D
44. A
45. A