

Find the composition.

1) $f(x) = 6x + 7$; $g(x) = 9x^2 - 7x - 8$
Find $(g \circ f)(-8)$.

5) $f(x) = \frac{x - 10}{x + 9}$

Find the indicated composition.

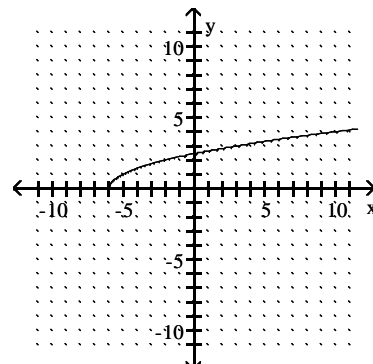
2) $f(x) = 4x^2 + 4x + 6$; $g(x) = 4x - 4$
Find $(g \circ f)(x)$.

6) $f(x) = \sqrt{x - 5}$

3) $f(x) = 6\sqrt{x + 6}$; $g(x) = 8x + 8$
Find $(g \circ f)(x)$.

Use the graph of f to sketch a graph of the inverse of f using a dashed curve.

7)

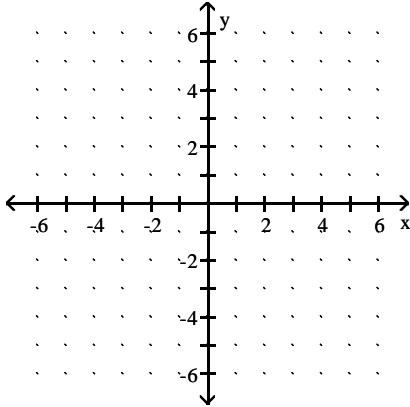


Find $f^{-1}(x)$ for the following one-to-one function f .

4) $f(x) = x^3 - 5$

Graph.

1) $f(x) = 3^x - 1$

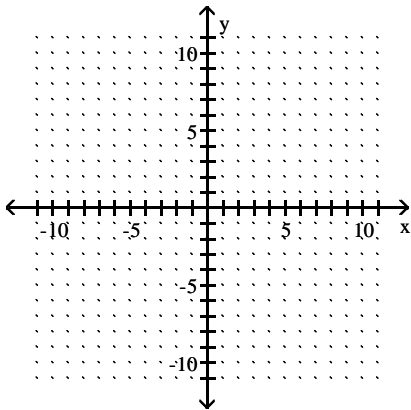


4) $\left(\frac{1}{2}\right)^x = 64$

5) $2(1 + 2^x) = 32$

Graph the function. Describe its position relative to the graph of the indicated basic function.

2) $f(x) = -2^x + 2$; relative to $f(x) = 2^x$



Solve the problem.

6) Sven invested \$4000 at 9% compounded annually. How much will be in the account after 5 years? Round to the nearest cent.

7) A computer is purchased for \$3300. Its value each year is about 77% of the value the preceding year. Its value, in dollars, after t years is given by the exponential function $V(t) = 3300(0.77)^t$. Find the value of the computer after 5 years.

Solve the equation.

3) $5^x = \frac{1}{25}$

Write in logarithmic form.

1) $3^2 = 9$

7) $-8 \log_t 4 = -16$

2) $e^{-2} = 0.1353$

Write in exponential form.

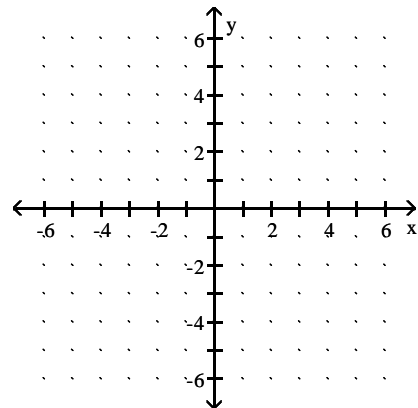
3) $\log_w Q = 13$

8) $\frac{1}{2} \log_2 x + 8 = 7$

4) $\log_e 41 = 3.714$

Graph.

9) $f(x) = \log_2 x$



Solve.

5) $\log_4 x = -3$

6) $\log_5 x + 6 = 2$

EAST LOS ANGELES COLLEGE
MATH 125 (INTERMEDIATE ALGEBRA) WORKSHEET SECTION 12.4

NAME:

Simplify.

1) $2^{\log_2 9^x}$

2) $\log_3 3^{2x}$

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

3) $\log_2 7 + \log_2 9$

4) $\log_a 0.001 + \log_a 1000$

5) $\log_x 45 - \log_x 5$

6) $\log_w (x^2 - 9) - \log_w (x - 3)$

Write the expression using a multiple of a logarithm.

7) $\log_6 \sqrt{y}$

Express as a sum, difference, and product of logarithms, without using exponents.

8) $\log_{17} \frac{13\sqrt{r}}{s}$

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

9) $(\log_b t - \log_b s) + 4\log_b u$

10) $3 \log_c x - \frac{3}{5} \log_c y + \frac{1}{2} \log_c w - 5 \log_c z$

Express as a sum, difference, and product of logarithms, without using exponents.

11) $\log_b \sqrt[3]{\frac{x^4}{y^6 z^9}}$

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MATH 125 (INTERMEDIATE ALGEBRA) WORKSHEET SECTION 12.5

Using a calculator, evaluate to four decimal places.

1) $\log 3088$

2) $\ln 0.988$

7) What is the intensity in watt/m² of a noise measured at 40 decibels? $D = 10 \log (S/S_0)$, where S_0 is 10^{-12} watt/m². (Round to 3 significant digits.)

Find the exact value of the logarithm using $\log_b b^x = x$.

3) $\log \frac{1}{100,000}$

4) $\ln e^5$

8) How long will it take for \$3200 to grow to \$23,200 at an interest rate of 9.4% if the interest is compounded quarterly? Round the number of years to the nearest hundredth.

5) $\ln \sqrt[4]{e}$

Solve the problem.

6) Use the formula $D = 10.0 \log (S/S_0)$, where the loudness of a sound in decibels is determined by S , the number of watt/m² produced by the soundwave, and $S_0 = 1.00 \times 10^{-12}$ watt/m². A certain noise measures 47 decibels. If the intensity is multiplied by 10, how many decibels will the new noise measure? (Round to an appropriate number of significant digits.)

Solve the equation.

1) $2(1 + 2^x) = 8$

2) $2^{3x} = 36$ (Round to the nearest hundredth.)

3) $8^{3x} = 7^x + 1$ (Round to the nearest thousandth.)

Solve the exponential equation.

4) $e^{-0.2t} = 0.15$

Find the logarithm using the change-of-base formula.

5) $\log_4 24.11$

6) $\log_9 0.719$

Solve the logarithmic equation.

7) $\log_4 (x - 5) + \log_4 (x - 5) = 1$

8) $\ln x - \ln (x - 3) = \ln 8$

9) $\ln (2x - 5) = \ln 5 - \ln (x - 1)$

10) $\log(x + 3) = 1 - \log x$

Solve.

- 12) How long will it take for the population of a certain country to double if its annual growth rate is 2%? Round to the nearest year. Use the exponential growth model $P(t) = P_0 e^{kt}$.

Compute the compound interest.

- 11) \$8500 is invested at 4% compounded quarterly. In how many years will the account have grown to \$14,500? Round to the nearest tenth of a year.

Solve the problem.

- 13) How long will it take a sample of radioactive substance to decay to half of its original amount, if it decays according to the function $A(t) = 400e^{-0.072t}$, where t is the time in years? Round to the nearest hundredth year.

Answer Key WORKSHEET 12.1

Testname: W_12_1

1) 15,408

2) $(g \circ f)(x) = 16x^2 + 16x + 20$

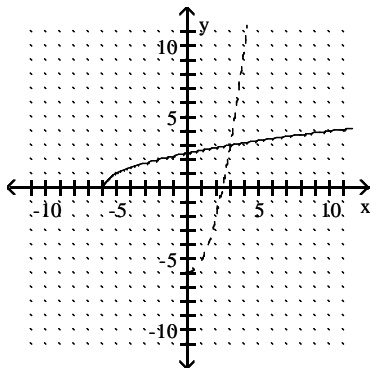
3) $(g \circ f)(x) = 48\sqrt{x+6} + 8$

4) $f^{-1}(x) = \sqrt[3]{x+5}$

5) $f^{-1}(x) = \frac{-9x-10}{x-1}$

6) $f^{-1}(x) = x^2 + 5, x \geq 0$

7)



Answer Key WORKSHEET 12.3

Testname: W_12_3

1) $\log_4 16 = 2$

2) $-2 = \log_e 0.1353$

3) $w^{13} = Q$

4) $e^{3.714} = 41$

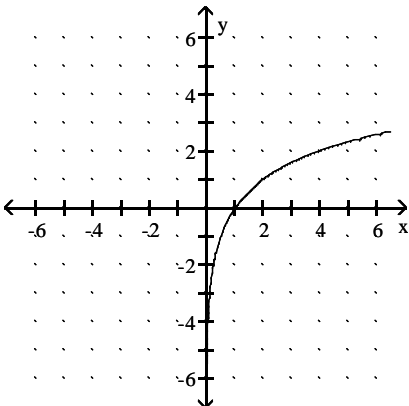
5) $\frac{1}{64}$

6) $\frac{1}{625}$

7) 2

8) $\frac{1}{16}$

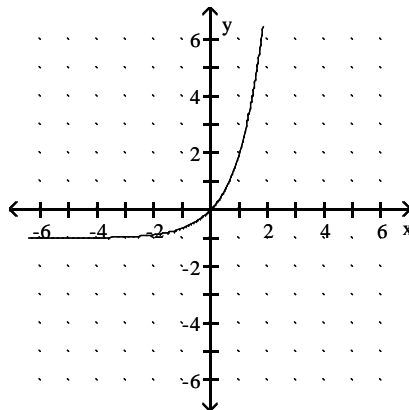
9)



Answer Key WORKSHEET 12.2

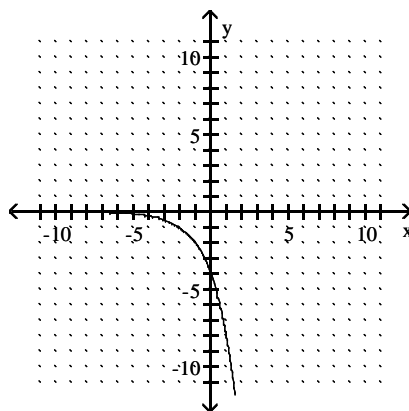
Testname: W_12_2

1)



2) Moved left 2 unit(s);

reflected across x-axis



3) -2

4) -6

5) 2

6) \$6154.50

7) \$893.24

Answer Key WORKSHEET 12.4

Testname: W_12_4

- 1) $9x$
- 2) $2x$
- 3) $\log_2 63$
- 4) $\log_a 1$
- 5) $\log_x 9$
- 6) $\log_w (x + 3)$
- 7) $\frac{1}{2} \log_6 y$
- 8) $\log_{17} 13 + \frac{1}{2} \log_{17} r - \log_{17} s$
- 9) $\log_b \frac{tu^4}{s}$
- 10) $\log_c \frac{x^3 w^{1/2}}{y^3/5z^5}$
- 11) $\frac{4}{3} \log_b x - 2 \log_b y - 3 \log_b z$

Answer Key WORKSHEET 12.6

Testname: W_12_6

- 1) 1
- 2) 1.14
- 3) 0.453
- 4) 9.4856
- 5) 2.2958
- 6) -0.1501
- 7) 7
- 8) $\frac{24}{7}$
- 9) $\frac{7}{2}$
- 10) 2
- 11) 13.4 years
- 12) 35 yr
- 13) 9.63 years

Answer Key WORKSHEET 12.5

Testname: W_12_5

- 1) 3.4897
- 2) -0.0121
- 3) -5
- 4) 5
- 5) $\frac{1}{4}$
- 6) 57 decibels
- 7) 1×10^{-8} watt/m²
- 8) 21.32 yr