

NAME _____

**MATH 115
REVIEW CHAPTER 12**

For the given functions f and g, find the requested function.

1) $f(x) = 5x - 5$; $g(x) = 8x - 2$

Find $(f - g)(x)$.

1) _____

For the given functions f and g, find the indicated composition.

2) $f(x) = x^2 + 6x$; $g(x) = x + 3$

Find $(g \circ f)(2)$.

2) _____

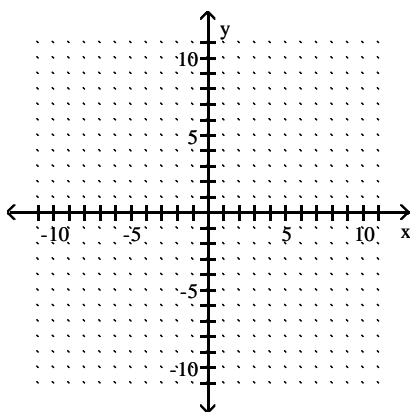
3) $f(x) = 4x^2 + 6x + 8$, $g(x) = 6x - 7$
 $(g \circ f)(x)$

3) _____

On the same set of axes, graph the given one-to-one function and its inverse .

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

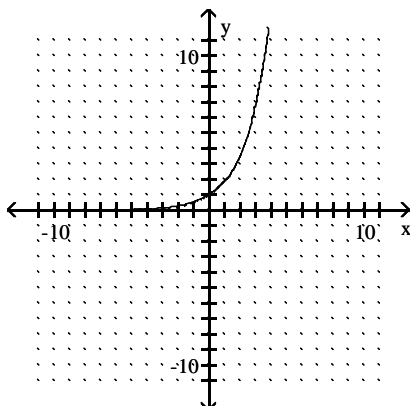
4) _____



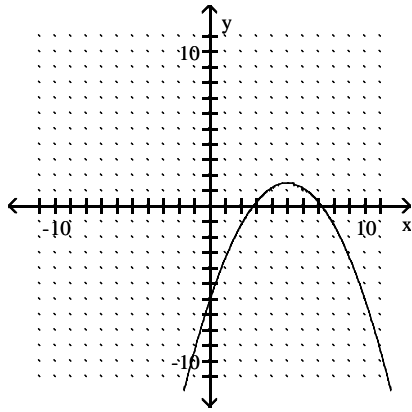
Determine whether the given graph is the graph of a one-to-one function.

5)

5) _____



6)



6) _____

Determine whether the function is one-to-one. If it is one-to-one, find an equation or a set of ordered pairs that defines the inverse function of the given function

7) $y = 7x + 6$

7) _____

Use the properties of logarithms to write the expression as a single logarithm.

8) $\log_6 x + 3\log_6 x - \log_6 (x + 5)$

8) _____

Provide an appropriate response.

9) Write the expression $\log_5 \frac{3x^2}{y^3}$ as a sum or difference of multiples of logarithms.

9) _____

10) Approximate $\log_2 5$ to four decimal places.

10) _____

11) Solve $4^5 + 3^x = \frac{1}{256}$ for x . Give an exact solution.

11) _____

12) Solve $5^x + 7 = 8$ for x . Give an exact solution.

12) _____

13) Solve $3^x + 8 = 4$ for x . Approximate the solution to four decimal places.

13) _____

Solve the logarithmic equation for x. Give an exact solution

14) $\log_2 x = -3$

14) _____

15) $\log_6 (x + 5) = 4$

15) _____

16) $\log_{10} 3 + \log_{10} x = 1$

16) _____

17) $\log_8 (x + 2) - \log_8 x = 2$

17) _____

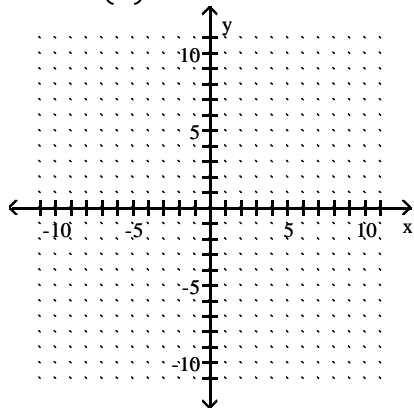
Provide an appropriate response.

18) Solve $\ln (9x + 4) = 1.60$ accurate to four decimal places.

18) _____

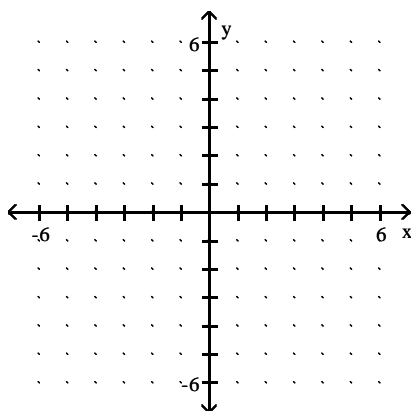
19) Graph $y = \left(\frac{1}{4}\right)^x - 2$.

19) _____



20) Graph the functions $y = 5^x$ and $y = \log_5 x$ on the same coordinate system.

20) _____



Use the formula $A = P\left(1 + \frac{r}{n}\right)^{nt}$ to solve.

21) Find the amount of money in an account after 7 years if \$3800 is deposited at 5% annual interest compounded monthly. 21) _____

22) \$1500 is invested at 6% compounded quarterly. In how many years will the account have grown to \$9500? Round to the nearest tenth of a year. 22) _____

Use the population growth formula $y = y_0 e^{kt}$ to solve.

23) The size of the coyote population at a national park increases at the rate of 4.2% per year. If the size of the current population is 170, find how many coyotes there should be in 3 years. 23) _____

24) If the annual population growth rate is 5.1%, find how long will it take a population of birds to increase from 200 birds to 1300. Round to the nearest whole year. 24) _____

Solve the problem.

- 25) The formula $\log(1 + k) = \frac{0.4}{D}$ relates the doubling time D , in days, and the growth rate k for a population of rodents. Find the rate at which the population is increasing if the doubling time is 44 days. Round to the nearest tenth of a percent. 25) _____