

Name _____

Directions: Bring this worksheet -- completed -- to my office *before the test* to check your answers against an answer sheet and to receive extra for having done so.

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

1) $f(x) = \sqrt{x+1}$, $g(x) = 3x$; Find $(f \circ g)(1)$.

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

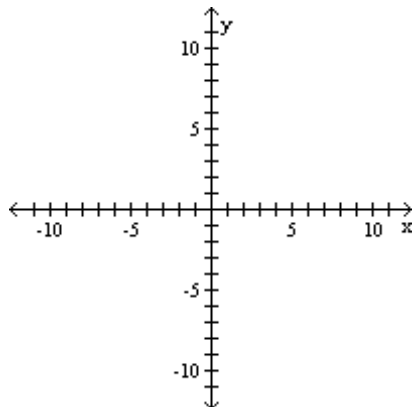
2) $f(x) = \frac{3}{x-7}$, $g(x) = \frac{7}{8x}$; Find $(f \circ g)(x)$.

Find the domain of the composite function $f \circ g$.

3) $f(x) = x + 4$; $g(x) = \frac{9}{x+6}$

Graph the function as a solid line or curve and its inverse as a dashed line or curve on the same axes.

4) $2y - 6 = 4x$



Decide whether or not the functions are inverses of each other.

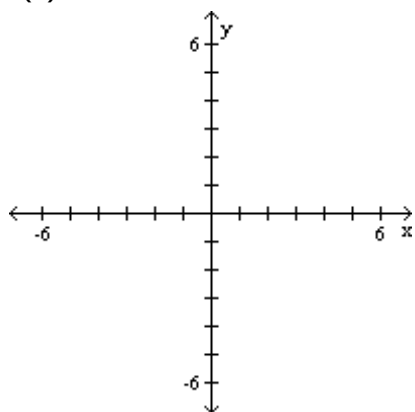
5) $f(x) = 9x - 9$, $g(x) = \frac{1}{9}x + 1$

Find the inverse function of f . State the domain and range of f .

6) $f(x) = \frac{3x - 2}{x + 5}$

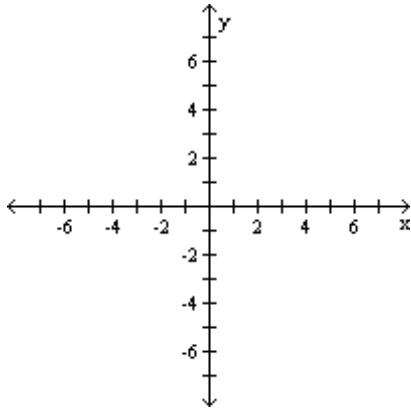
Use transformations to graph the function. Determine the domain, range, and horizontal asymptote of the function.

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



Graph the function.

8) $f(x) = e^{3x}$



Solve the equation.

9) $4^{5-3x} = \frac{1}{256}$

Find the exact value of the logarithmic expression.

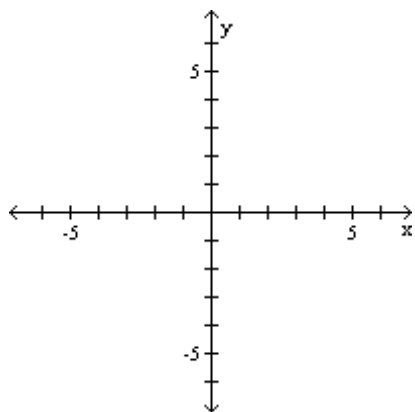
10) $\log_7 \frac{1}{49}$

Find the domain of the function.

11) $f(x) = \log_2(25 - x^2)$

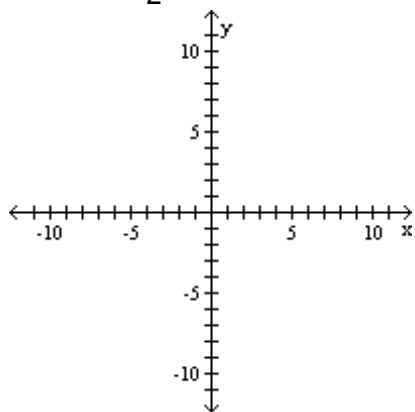
Graph the function and its inverse on the same Cartesian plane.

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



Graph the function.

13) $f(x) = \log_2 (x + 2)$



Solve the equation.

14) $\log_3 (x^2 - 2x) = 1$

Suppose that $\ln 2 = a$ and $\ln 5 = b$. Use properties of logarithms to write each logarithm in terms of a and b .

15) $\ln 10$

Write as the sum and/or difference of logarithms. Express powers as factors.

16) $\log_2 \frac{17\sqrt{m}}{n}$

Solve the equation.

17) $\log_3 x + \log_3(x - 24) = 4$

18) $2(7 + 3x) = \frac{1}{4}$

Solve the problem.

19) Austin invested \$12,000 in an account at 11% compounded quarterly. Find the amount in Austin's account after a period of 6 years.

20) The size P of a small herbivore population at time t (in years) obeys the function $P(t) = 700e^{0.24t}$ if they have enough food and the predator population stays constant. After how many years will the population reach 3500?

21) The half-life of silicon-32 is 710 years. If 70 grams is present now, how much will be present in 400 years? (Round your answer to three decimal places.)