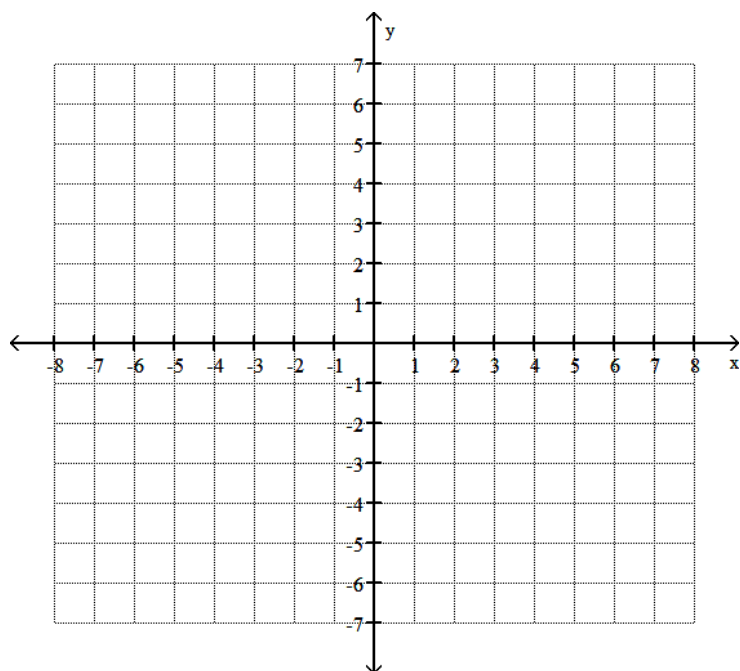


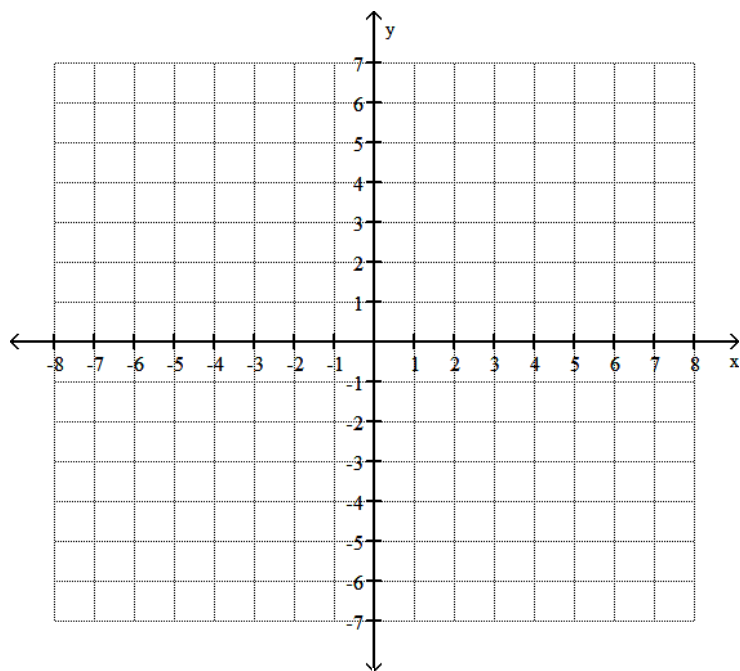
YOU MUST SHOW ALL WORK TO RECEIVE CREDIT

Graph the function.

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



2) $f(x) = \log_5 x$



- 3) The growth in the population of a certain rodent at a dump site fits the exponential function $A(t) = 286e^{0.031t}$, where t is the number of years since 1973. Estimate the population in the year 2000.

Use the interest formulas $A = P\left(1 + \frac{r}{n}\right)^{nt}$ or $A = Pe^{rt}$ to solve.

- 4) Suppose that you have \$12,000 to invest. Which investment yields the greater return over 8 years: 8.75% compounded continuously or 8.9% compounded semiannually?

Convert to exponential form.

$$5) \log_3 \frac{1}{81} = -4$$

Write the logarithmic expression as a single logarithm with coefficient 1, and simplify as much as possible.

$$6) 7 \log_9 t - 6 \log_9 u - 3 \log_9 v$$

Write the logarithm as a sum or difference of logarithms. Simplify each term as much as possible.

$$7) \log_3 \left(\frac{1}{27} p^5 q \right)$$

Evaluate to four decimal places:

$$8) \log_{18} (24.84)$$

9) Solve. $\left(\frac{1}{3}\right)^{6x+5} = 9x-1$

Solve the logarithmic equation.

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

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

Solve the equation. If necessary, round to thousandths.

12) $5x+4 = 4x$