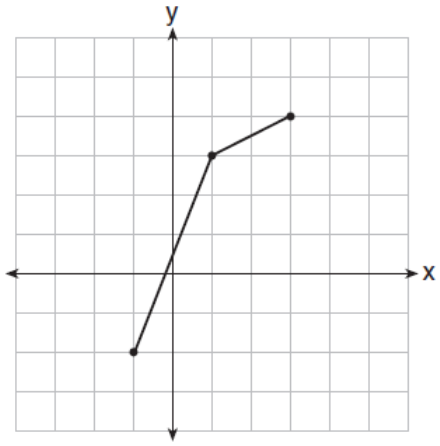
More Review for Exam 31

Logs and inverse of a function

1) For the function $f(x) = (x-3)^3 + 1$, find $f^{-1}(x)$.

2) The function, *f*, is drawn on the accompanying set of axes. On the same set of axes, sketch the graph of f^{-1}, the inverse of *f*.



3) Solve algebraically, to the *nearest hundredth*, for all values of *x*:
$\log_2(x^2 - 7x + 12) - \log_2(2x - 10) = 3$

4) If $\log x = 2\log a + \log b$, then *x* equals

   1) a^2b
   2) $2ab$
   3) $a^2 + b$
   4) $2a + b$

5) If $\log_{(x+1)} 64 = 3$, find the value of *x*.

6) The equation $\log_a x = y$ where $x > 0$ and $a > 1$ is equivalent to

1) $x^y = a$
2) $y^a = x$
3) $a^y = x$
4) $a^x = y$

7) If $2x^3 = y$, then $\log y$ equals

1) $\log(2x) + \log 3$
2) $3\log(2x)$
3) $3\log 2 + 3\log x$
4) $\log 2 + 3\log x$

8) Solve algebraically for *x*: $\log_{5x-1} 4 = \frac{1}{3}$

9) What is the value of *x* in the equation $3^x = 148$, expressed to the *nearest hundredth*?

10) Using logarithms, solve the equation $2^{3x} = 7$ for *x* to the *nearest tenth*.

11) Kristen invests $5,000 in a bank. The bank pays 6% interest compounded monthly. To the nearest tenth of a year, how long must she leave the money in the bank for it to double? (Use the formula $A = P\left(1 + \frac{r}{n}\right)^{nt}$, where *A* is the amount accrued, *P* is the principal, *r* is the interest rate, $n = 12$, and *t* is the length of time, in years.)

12) An amount of *P* dollars is deposited in an account paying an annual interest rate *r* (as a decimal) compounded *n* times per year. After *t* years, the amount of money in the account, in dollars, is given by the equation $A = P\left(1 + \frac{r}{n}\right)^{nt}$. Rachel deposited $1,000 at 2.8% annual interest, compounded monthly. In how many years, to the *nearest tenth of a year*, will she have $2,500 in the account?