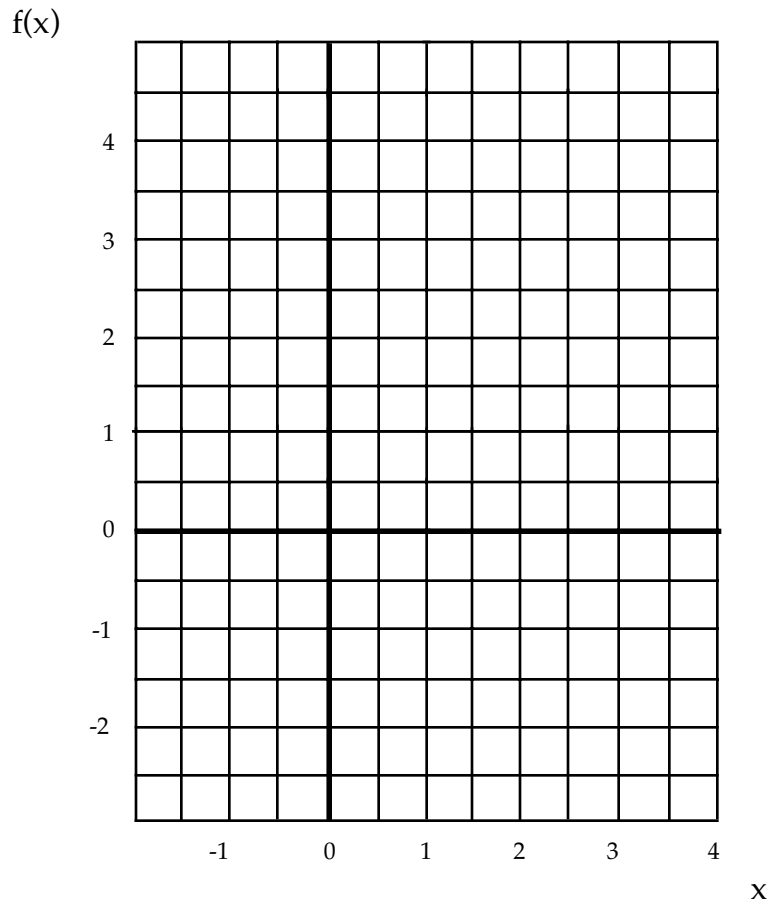


Logarithms Test 80

1) Express the function; $y = a^x$ in logarithmic notation.

2) Graph the function; $y = \log_2 x$



3) Evaluate the following.

a) $\log_2 128$

b) $\log_{100} 10$

c) $\ln e^4$

d) $\log_5(1/125)$

e) $\log 700$

f) $\ln 0.2$

4) Solve for x.

a) $\log_4 x = 5$

b) $\log_x (1/27) = 3$

5) Solve for x.

$$\log (x) + \log (x - 1) = \log 6$$

6) Solve for x by taking logs of both sides. Give answer to two decimals.

a) $5^x = 250$

b) $2^{x-1} = 5^{4-2x}$

7) Write as a single logarithm.

a) $2 \log x + \log y$

b) $\log u - 3 \log v$

8) Express as a sum and/or difference of logs.

a) $\log (10ab)$

b) $\log (a^3b/c)$

9) Suppose that $\log x = a$, and $\log y = b$. Express the following in terms of a and b.

a) $\log x^4$

b) $\log xy$

c) $\log (x/y)$

d) $\log (x^2y^3)$

e) $(\log x)/(\log y)$

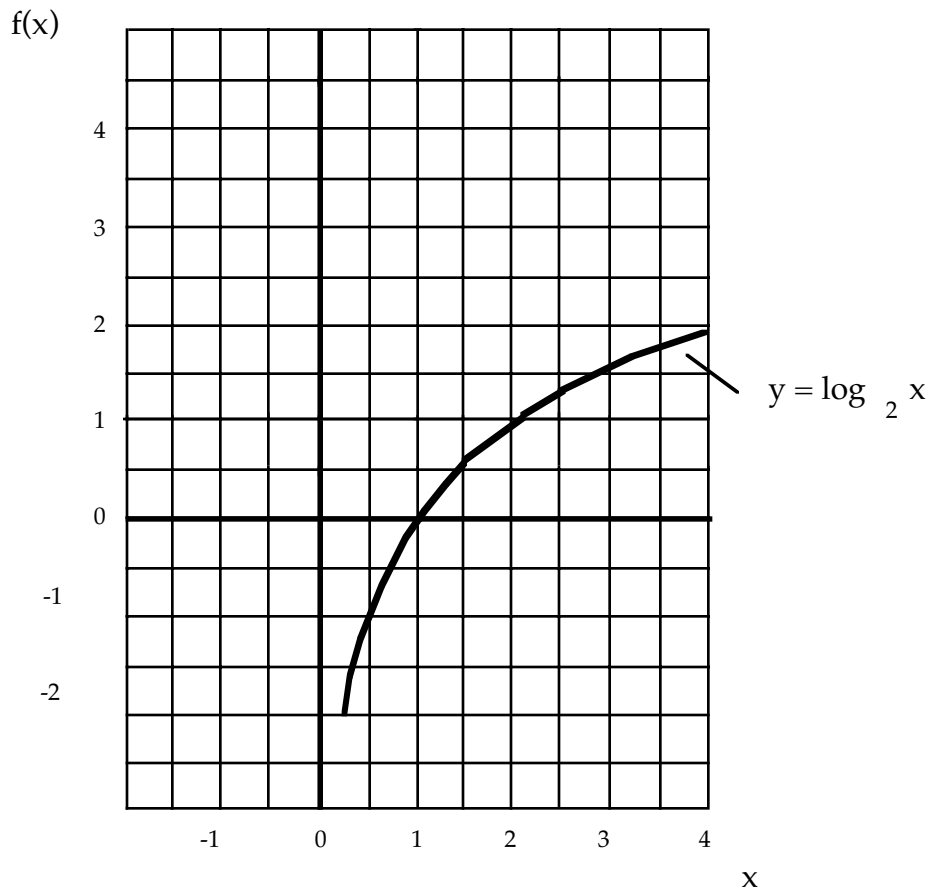
f) $\log (1/y)$

10) An earthquake has an intensity of 58,000. Find the magnitude.

11) Find the amount of time required for \$4000 to increase to \$9000, if the interest rate is 4.3% per year compounded annually.

12) An isotope of sodium has a half-life of 15 hours. The initial amount is 10. grams. The equation of decay is; $A(t) = 10 \times 2^{-(t/15)}$. Find the time when the amount of radioactive sodium equals 3.0 grams. Assume the start is at $t = 0$.

Answers: 1) $x = \log_a y$, 2)



3)a) 7, b) $1/2$, c) 4, d) -3, e) 2.8, f) -1.6, 4)a) 1024, b) $1/3$, 5) 3, 6)a) 3.43, b) 1.82, 7)a) $\log(x^2y)$, b) $\log(u/v^3)$, 8)a) $1 + \log a + \log b$, b) $3\log a + \log b - \log c$, 9)a) $4a$, b) $a + b$, c) $a - b$, d) $2a + 3b$, e) a/b , f) $-b$, 10) 4.8, 11) 19.3 years, 12) 26 hours.