

# Solutions to Quiz 3

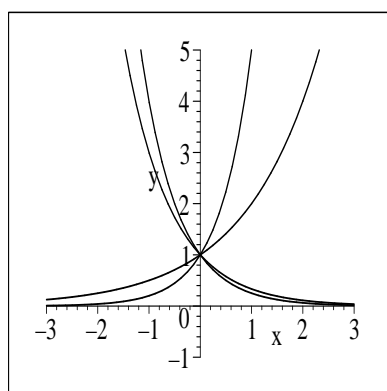
MATH 139-02

Thursday, January 29, 2004

1. A town has a population of 1000 people at time  $t = 0$ . Write a formula for the population  $P$  as a function of the year  $t$  if the population increases by 2% per year.

**Solution:**  $P(t) = 1000(1.02)^t$ .

2. Below are graphs of four exponential functions  $f(x) = a^x$ ,  $g(x) = b^x$ ,  $h(x) = c^x$ , and  $k(x) = d^x$ , with  $a < b < c < d$ . (That is,  $a$  is smallest and  $d$  is greatest.) Label the graphs with the appropriate function name.



**Solution:** If we label at the top of the graph, the functions are  $g$ ,  $f$ ,  $k$ , and  $h$  from left to right.

3. Determine whether the table of values below could correspond to an exponential function. If it can, find a formula for the function.

$x$	0	1	2	3	4
$f(x)$	1.5	1.95	2.535	3.296	4.284

**Solution:** The ratios between terms are all about 1.3 (within roundoff), so this could be an exponential function. We have  $f(x) = 1.5(1.3)^x$ .