Section 1.2
EXPONENTIAL FUNCTIONS
September 5, 2012

Warm-up

1. A normal piece of paper is 0.097 mm thick. How tall would a piece of paper be if you could fold it in half 50 times? (Hint: Start by making a table with small values for the number of times the piece of paper has been folded.)

Class Work

1. In 2007, the world’s population reached 6.7 billion and was increasing at a rate of 1.2% per year. Assume that this growth rate remains constant. (In fact the growth rate has decreased since 1987.)

   (a) Write a formula for the world population (in billions) as a function of the number of years since 2007.
(b) Use your formula to estimate the population of the world in the year 2020.

(c) Graph the function from Part (a) on your calculator and sketch the graph of the world population as a function of years since 2007 below. Use the TRACE feature to estimate the doubling time of the population of the world.
2. Give a possible formula for the function.
3. Estimate the $x$-intervals on which the function graphed below is:

- (a) Increasing and concave up
- (b) Increasing and concave down
- (c) Decreasing and concave up
- (d) Decreasing and concave down