

## Homework 6

1. My friend Jenny just sold her motorcycle. She got \$2000 for it. She's going to put it in an account, and once she has \$3000 she's going to go on vacation.
  - (a) Suppose she puts it in a bank account that makes 5% APR, compounded monthly. Will she have enough in five years?
  - (b) Suppose she puts it in a mutual fund that makes 8% APR, compounded continuously. Will she have enough in five years?
2. Now, some practice with functions. Tell me what the dependant and independent variables are for each of the following functions.
  - (a) The water pressure at a given depth.
  - (b) How light it is out at a given time.
  - (c) The amount of gas you have in your car after you've driven a given distance.
3. For each of the following functions:
  - Tell me the domain and range
  - Evaluate  $f(5)$
  - (a)  $f(x) = x$
  - (b)  $f(x) = x^4$
  - (c)  $f(x) = \log(x)$  You'll certainly need your calculator for this one. Let me know if you need help.
4. Let's go back to my friend Jenny. She's looking at \$2000 a sweet hedge fund that makes 12% APR, compounded continuously.
  - (a) Make a table of values listing the amount of money in her account each year for the next 10 years.
  - (b) Use your table of values to graph the function whose *independent* variable is the number of years passed, and *dependent* variable is the amount of money in her bank account.
  - (c) What is the domain and range of this function?
5. As great as the hedge fund seemed, Jenny is sensibly suspicious of anybody promising 12% APR with no risk. She starts looking at some other accounts instead. Suppose she is looking to deposit \$2000.
  - (a) Graph **on the same set of axes** the amount of money she'd have in her bank account over the next ten years in each of the following accounts:
    - She is getting *simple* interest (p. 229, if you need a review), at 7% per year, paid annually
    - She is getting *compound* interest, at 6% APR, compounded continuously
  - (b) How long would it take for the amount of money in the second account to overtake the amount in the first account?