

MATH 1520: Assign. #1

Due: Tues, Feb 3

- (6 marks) Decide whether $f(x)=1-x^2$ is a function by making a rough sketch and applying the vertical line test. What is its domain? Range? Is it even, odd, or neither?
- (9 marks) The Milo Company manufactures olives. The marginal cost to make a jar of olives is \$2, and the company sells them for \$5.
 - Find the cost function $C(x)$, given that it is linear.
 - How many jars must they sell in order to break even?
 - How many jars must they sell in order to make a profit of \$5700?
- (7 marks) Ashley is deciding which mutual fund to invest her \$5000 in. Fund 1 earns 6% annual interest compounded semi-annually and Fund 2 earns 5% annual interest compounded quarterly. (NOTE: use a calculator for parts a) and b))
 - Calculate the interest earned in Fund 1 if she is going to invest for 4 years.
 - Calculate the interest earned in Fund 2 if she is going to invest for 4 years.
 - Which fund should she invest in?
- (5 marks) Assuming continuous compounding, if the inflation rate averaged 3% per year; (NOTE: use a calculator for parts a) and b))
 - how much would a \$1 item cost after 5 years?
 - how long would it take for that item to reach a cost of \$2?
- (4 marks) I have a chunk of an element called *Darnium* in my office. The amount of *Darnium* present after t years is given by $A=A_0 e^{0.5t}$
 - Looking at the rate k , is *Darnium* growing or decaying?
 - How long will it take for my *Darnium* to double in size?
- (5 marks) Steph is going to invest into two accounts, Account A giving 8.5% annual interest compounded monthly, and Account B giving 8% annual interest compounded continuously. (NOTE: use a calculator for part a))
 - Find the effective rate corresponding to each stated rate.
 - Which is a better account to invest in?
- (6 marks) For the function f whose graph is given below, state the value of the given quantity, if it exists. If it does not, explain why.
 - $\lim_{x \rightarrow 1} f(x)$
 - $\lim_{x \rightarrow 1^-} f(x)$
 - $\lim_{x \rightarrow 1^+} f(x)$
 - $\lim_{x \rightarrow -1} f(x)$
 - $f(-1)$

