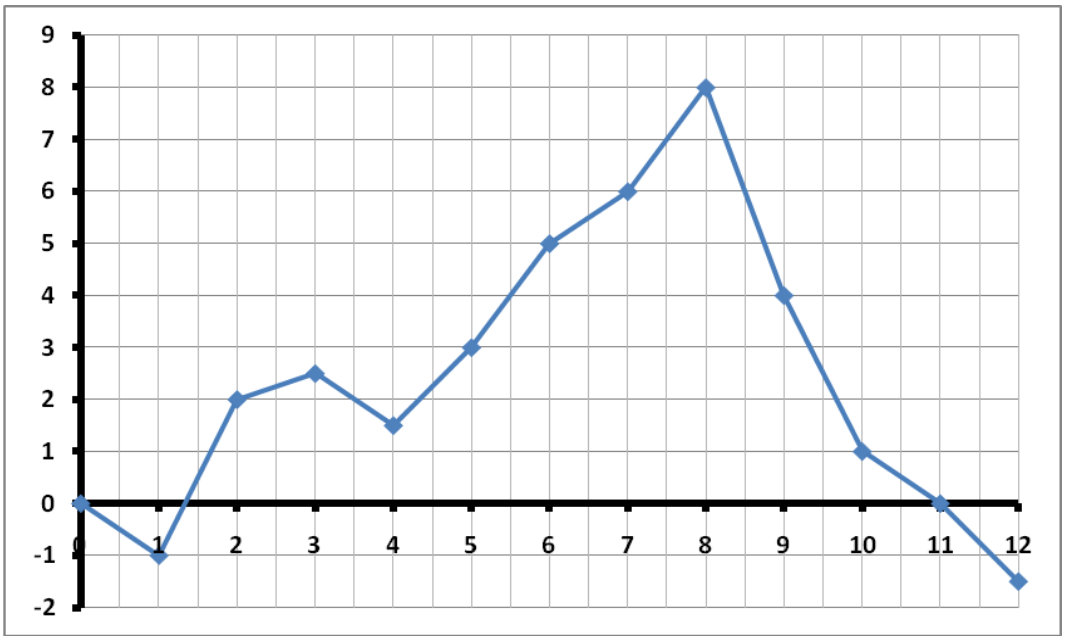
Math 1314 Section: _____

Lab 2 Chapter 2 & 1.6 Name:_____

Please show all work in the space provided for credit.

1. The graph below represents the graph of a function P(t) where t is the number of years past 1997 and P(t) is the profit of a small home business. The units on the y-axis are in thousands of dollars. Note that the "x-axis" is labeled underneath.



a.) Find P(6). _____ (This should correspond to a POINT on the graph.)

b.) Now interpret this point. This means that the profit for this business was

$ _____ in the year _____.

c.) Find P(12). _____ (This should correspond to a POINT on the graph.)

d.) Now interpret this point. This means that the profit for this business was

$ _____ in the year _____.

e.) State the intervals of t where the graph is increasing. _____

f.) Now interpret these intervals.

State the time frames (using the years) where the profit was increasing**.**

_____

Describe the time frames (using the years) where the profit was decreasing.

_____

g.) State (or approximate) the coordinates of the x-intercept(s). _____

h.) The x-intercepts represent when the business has a profit of $ _____

i.) State the domain, using interval notation. _____

#1 continued.

j.) State the range, using interval notation. _____

k.) The maximum profit was $ _____ in the year _____.

l.) The worst year for this company in terms of profit was _____ when they had a

profit of $ _____.

2.) The function *f(x)* = 27 $x^{\frac{1}{3}}$ models the number of plant species, *f(x)*, on an island in terms of the area, *x*, in square miles. What is the area of an island that has 54 species of plants? Show work.

3.) A stone is dropped into a liquid forming circles which increase in radius with time according to the formula r(t) = 4t. The area of a circle related to radius is $A(r) = \pi r^2$**. Using composition of functions, find an equation that would give area as a function of time.**

4.) For $f(x) = 3x^2 + 5$ and $g(x) = 7x - 2$,

a. Verify: $g(x + 2) \neq g(x) + g(2)$. (The work should be different for each side of the equation.)

b. Find $(f - g)(x)$.

c. Using the resulting function in (b), show that $(f - g)(2) = f(2) - g(2)$.
(The work should be different for each side of the equation.)

d. Is $(fg)(0) = \left(\frac{f}{g}\right)(0)$? Explain.

e. Find $\frac{f(x+h) - f(x)}{h}$, $h \neq 0$. Show work.

5. The graph of a function g(x) is shown below on a grid.

a.) Fill in the key points for g(x) in the table below.

x					
g(x)					

b.) The function $h(x) = -g(x-5) + 4$ involves three transformations on g(x). List the transformations that will be done - in order.

1.) _____

2.) _____

3.) _____

c.) Fill in the table of transformed values for the new graph

x					
h(x)					

d.) Graph h(x) on the grid below