MATH 422 Week 6 Quiz Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Directions:**  Answer each question to the best of your ability. **Show your reasoning** and/or process used to answer the question(s) where it is appropriate. A calculator will be necessary for this quiz. You are not permitted to use a device that has internet capability. There are 5 questions.

Section 5.1

1. (3 pts)

For the table below, could the table represent a function that is linear or exponential? Why? What is the justification for the choice of a model?

Circle your choice:

is linear exponential

Provide reasoning for your choice:

|  |  |
| --- | --- |
| x | f(x) |
| 0 | 240 |
| 1 | 120 |
| 2 | 60 |
| 3 | 30 |

2. (3 pts)

A population numbers 18,000 organisms initially and grows by 1.9% each year.  
  
Suppose represents population, and the number of years of growth. An exponential model for the population can be written in the form . Write the model for this situation.  
  
 =  

3. (3 pts)

A population numbers 16,000 organisms initially and decreases by 17.8% each year.  
  
Suppose represents population, and the number of years of growth. An exponential model for the population can be written in the form where   
  
Construct a graph of this model (Please label the x and y axes, note t = x):Chart

Description automatically generated with low confidence

4. (3 pts)

The fox population in a certain region has an annual growth rate of 6 percent per year. It is estimated that the population in the year 2000 was 10600.  
  
(a) Find a function that models the population years after 2000 ( for 2000).  
Your answer is    
  
(b) Use the function from part (a) to estimate the fox population in the year 2008.  
Your answer is (the answer should be an integer)  

5. (3 pts)

A vehicle purchased for $25,000 depreciates at a constant rate of 8%. Determine the approximate value of the vehicle years after purchase. Round to the nearest whole dollar.  
  
$  