Math 300 **Fall 2024**

Lab Assignment #25

This lab is due at 12:30 PM on Wednesday, 12/11, and is worth 10 points. This part may be done individually, or in a group of 2, 3, or 4 people.

1) The population of a city is 68,500 in the year 2000. It grows 2.8% per year.
a) Find an exponential model for the population n years after 2000.
b) What is the population in the year 2024?
c) When will the population be 1,000,000?

2) The initial value of a car is $38,000. Eight years later, the value is $11,000.
a) Find an exponential model for the value n years after purchase.
b) By what percent does its value decrease each year?
c) What is the value 20 years after purchase?
d) When will the car be worth $100?

3) You buy an RV for $140,000. At the end of each year, it is worth 80% of its value from the previous year.
a) Find an exponential model for the value after n years.
b) Find the value in 5 years.
c) Find the value in 15 years.
d) When will the RV be worth $60,000?
e) When will it be worth $6,000?

4) In the country of Elbonia, inflation is very bad. Each month, the price of stuff is 1.7 times as much as in the previous month. A quart of almond beverage costs 230 floofs right now.
a) Find an exponential model for the price of a gallon of milk after n months.
b) Find the price after 10 months.
c) Find the price after 30 months.
d) When will the almond beverage cost 10,000 floofs?
e) When will the almond beverage cost 1,000,000 floofs?

5) The average price of a pair of sneakers at Big 5 was $43 in 2010 and has gone up 3% each year.

a) Find an exponential model for the price n years after 2010.

b) Find the price in 2020.

c) Find the price in 2035.

d) When will sneakers cost $55?

e) When will sneakers cost $105?