Math 1215 **Hw 14** **Name**.....Solu.....

1.The equation for the price of a car that was bought for $10,000 and has depreciated 10% yearly is given as $y = (10000) * (1 - 0.1)^t$, where t = number of years since it was originally bought. Find the price of the car 8 years later.

a. Answer: $10000(0.9)^8 = 4304.7$

b. What is the rate of decrease? 10%

2.The equation for the price of a baseball card that was bought for 5 dollars and has appreciated 5% yearly is given as $y = (5) * (1 + .05)^t$, where t = number of years since it's original purchase. Find the value of the card 25 years later.

a. Answer: 16.93, $5(1.05)^{25} = 16.93$

b. What is the rate of increase? 5%

3.A city of 100,000 is having pollution problems and is decreasing in size 1% annually (every year). Find the equation for the population of this city and find the size of the city in 100 years.

Equation: $P(t) = 100,000(1-0.01)^t$ Answer: $100,000(0.99)^{100} = 36,603$

4.The price of a gallon of milk is given by the equation $P(x) = .5(1.03)^t$, where t = the years since 1939.

a.What is the price of a gallon of milk in 1939? 0.5

b.What was the rate of inflation (growth)? 3%

c. What is the predicted value of a gallon of milk in 2009?

2009, $t = 70 \Rightarrow 0.5(1.03)^{70} = 3.959$

5. Compute the amount owed (that's interest plus principal) on a simple interest loan of $2100 if the interest rate is 11.5% and the money is borrowed for (a) one year (b) 36 months (c) five years

One year $2100 + 2100 \cdot (0.115) \cdot 1 = 2341.5$

36 months $2100 + 2100(0.115) \cdot 3 = 2824.5$

Five years $2100 + 2100(0.115) \cdot 5 = 3,307.5$