Lesson 6 Assessment

1. Consider the functions shown below.

   A. $f(x) = (1.023)^x$ B. $f(x) = 320(0.95)^x$ C. $f(x) = 400(1.12)^x$

   D. $f(x) = 34.9(1.11)^x$ E. $f(x) = 172(0.99)^x$ F. $f(x) = 8452(0.67)^x$

   a) Which functions are increasing? _____

   b) Which function is increasing at the fastest rate? _____

      What is the growth rate for this function? _____

   c) Which function is decreasing at the fastest rate? _____

      What is the decay rate for this function? _____

2. Fred and Wilma purchase a home for $180,000. **Using function notation**, write a formula for the value, V, of the house t years after its purchase, assuming that the value

   a) Decreases by $1,500 per year.   b) Decreases by 2% per year.

   c) Increases by $3,100 per year.   d) Increases by 6% per year.

3. The following data set gives the value, V, of a car after t years.

Years since purchase	Value in Dollars
0	22,425
1	17,956
2	15,218
3	12,749
5	8,860
8	5,311

a) Determine an exponential regression equation of the form $V(t) = ab^t$ for this data set. Round the "*a*" value to the nearest whole number and the "*b*" value to three decimals.

b) Use the regression equation from part a to predict the value of the car after 12 years. Round your answer to the nearest cent. Write your answer in a complete sentence.

c) How long until the car is worth half of its original value? Round your answer to the nearest hundredth. Write your answer in a complete sentence.

d) How long will it take for the car's value to reach $1000? Round your answer to the nearest hundredth. Write your answer in a complete sentence.

e) Based on the regression equation, at what percent rate is the car's value decreasing each year?