**AFM HW 6 - EXPONENTIAL GROWTH AND DECAY NAME\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. Convert the following percentages into a growth or decay factor (common ratio)

$-12.5\% +1\% +4.3\% -76\% +33\% -2.6\%$

2. Annual sales for a fast food restaurant are $650,000 and are increasing at a rate of 4% each year. Write an exponential function to model the sales.

a) What are the sales after 7 years? b) After how many years will the sales be $1,000,000?

3. The population of a town is 2500 people and is decreasing at a rate of 3.5% each year. Write an exponential function to model the population.

1. What is the population of town after 5 years? b) When will only half the population be left?

4. The population of a school is 800 students and is increasing at a rate of 2% each year. Write an exponential function to model the population.

a) What is the population of the school after 9 years? b) When will the school double in size?

5. In 1991 Mr. Davis purchased his home for $160,000. Since then, the value of the home has increased about 5% each year. Write an exponential function to model the value of the home.

a) What is the value of Mr. Davis’s home today? b) When will the house be worth $750,000?

6. Find the amount in an account after 15 years if $5000 was initially invested and the account earns 8% annual interest compounded quarterly.

7. Find the length of time needed to earn $124.49 if Megan invests $957.62 at 6.5% interest, compounded continuously.

8. A savings account with interest compounded quarterly increased from $2500 to $3033.52 in three years. What annual interest rate did the account earn over this time period?

9. If Amanda borrows $3500 from the bank for 6 months at 7 ½ % interest, compounded continuously, how much will she have to pay back?

10. If Paige invests $800 in an account for 6 years that compounds monthly and receives $168 interest, what is her annual interest rate?