Obj.1 Name: _____ Due Date: _____ Hour: _____

For each function, do the following:

    a) Identify the initial amount, *a*, in each function
    b) State whether each function would show growth or decay
    c) Identify the growth factor or decay factor, *b*, in each function

1. $g(x) = 20 \cdot 2^x$ 2. $y = 200 \cdot (.05)^x$ 3. $y = 10{,}000 \cdot 1.01^x$ 4. $f(t) = \left(\frac{7}{8}\right)^t$

a)   a)   a)   a)

b)   b)   b)   b)

c)   c)   c)   c)

5. Suppose the population of a city is 50,000 people and is growing 3% each year.

    a) The initial amount, *a*, is _____
    b) The growth factor, *b*, is 100% + 3% which is 1 + _____ = _____
    c) Complete the equation $y = $ _____ · _____ —— to find the population after *x* years.
    d) Use your equation to predict the population after 25 years.

Each question below gives interest rate as an annual interest rate. Then each question gives a starting balance. Complete the formula $y = a \cdot b^x$ as if the interest rate was compounded:

    a) **Quarterly**   b) **Monthly**   (note: you will leave time a variable, x.) 6a has been completed as an example.

6. 3%; $500.

    a) For quarterly interest, *divide* the interest rate by *4*, then add *100*%.

        Don't forget to *multiply* the *time* by *4* too! $y = \underline{500} \cdot \underline{1.0075}^{4x}$

    b) For monthly interest, _____ the interest rate by _____, then add _____%.

        Don't forget to _____ the _____ by _____ too! $y = $ _____ · _____ ——

7. 4%; $1,700
    a) For quarterly interest, _____ the interest rate by _____, then add _____%.

        Don't forget to _____ the _____ by _____ too! $y = $ _____ · _____ ——

    b) For monthly interest, _____ the interest rate by _____, then add _____%.

        Don't forget to _____ the _____ by _____ too! $y = $ _____ · _____ ——

8. 4.5%; $25,000
    a) $y = $ _____ · _____ ——
    b) $y = $ _____ · _____ ——

9. 7.6%; $32
    a) $y = $ _____ · _____ ——
    b) $y = $ _____ · _____ ——

8.8 Exponential Growth homework

Name: _____ Date: _____ Hour: _____

Find the balance in each account a) annually, b) semi-annually, c) quarterly and d) monthly.

10. $4,000 principal earning 6% annual interest after 5 years.

a) $y = \underline{\hspace{1cm}} \cdot (1 + \underline{\hspace{1cm}}) ^{\underline{\hspace{0.5cm}}} =$

b) $y = \underline{\hspace{1cm}} \cdot \left(1 + \frac{}{2}\right)^{2\underline{\hspace{0.5cm}}} =$

c) $y = \underline{\hspace{1cm}} \cdot \left(1 + \frac{}{4}\right)^{4\underline{\hspace{0.5cm}}} =$

d) $y = \underline{\hspace{1cm}} \cdot \left(1 + \frac{}{12}\right)^{12\underline{\hspace{0.5cm}}} =$

11. $12,000 principal earning 4.8% annual interest after 7 years.

a)   b)

c)   d)

12. $500 principal earning 4% annual interest after 6 years.

a)   b)

c)   d)

13. $20,000 principal earning 3.5% annual interest after 10 years.

a)   b)

c)   d)