Algebra 2 Name: Key

Chapter 7a Test Review Date: _____ Period: _____

Identify the growth or decay factor in each equation below. Then, indicate whether it is growth or decay. Finally, describe the transformations for each equation from the parent graph.

1. $y = 3 \cdot \left(\frac{1}{2}\right)^{x+2} - 2$

Growth/Decay Factor: $\frac{1}{2}$
Circle One: Growth / Decay
Transformations: Shift Left 2; Down 2; Stretch 3

2. $y = -3 \cdot (2)^{x-1} - 3$

Growth/Decay Factor: 2
Circle One: Growth / Decay
Transformations: flips; Stretch 3; Shift Right 1; Down 3

3. $y = 4 \cdot \left(\frac{4}{3}\right)^{x-7} + 3$

Growth/Decay Factor: $\frac{4}{3}$
Circle One: Growth / Decay
Transformations: Stretch 4; Shift Right 7; Shift up 3

4. $y = 4 \cdot \left(\frac{2}{3}\right)^{x-1} + 2$

Growth/Decay Factor: $\frac{2}{3}$
Circle One: Growth / Decay
Transformations: stretch 4; Shift Right 1; Up 2

Use the following formulas to answer the application problems.

$y = P(1+r)^t$ $y = P(1-r)^t$ $y = P\left(1+\frac{r}{n}\right)^{nt}$ $y = Pe^{rt}$

5. You invest \$100,000 in an account with 1.4% interest. You plan on leaving the money in an account for 10 years, but you are not sure which type of account to choose. $r = .014$

a. If you chose to have the interest compounded quarterly, how much would you have after 10 years? $t = 10$

$y = P\left(1+\frac{r}{n}\right)^{nt}$ $y = 100000\left(1+\frac{.014}{4}\right)^{(4 \cdot 10)}$

$y = \$114,999.27$

b. If you chose to have the interest compounded continuously, how much would you have after 10 years?

$y = Pe^{rt}$ $y = 100000e^{((.014)(10))}$

$y = \$149,182.47$

c. Which would be the better option? Explain.

option (b) compounding continuously b/c more \$.

Use the following formulas to answer the application problems.

$y = P(1+r)^t$ $y = P(1-r)^t$ $y = P\left(1+\frac{r}{n}\right)^t$ $y = Pe^{rt}$

6. The world population in 1999 was approximately 6.08 billion. The annual rate of increase was about 1.26%. $r = .0126$

a. Which formula from the top of the page would you use to solve the problem?

$y = P(1+r)^t$

b. Using the formula you chose in Part A, write an equation that models the situation over any given time, t.

$y = 6.08(1+.0126)^t$

c. Using your equation from part B, what would the world population be in 2018?

$y = 6.08(1+.0126)^{19}$ $2018 - 1999 = 19$

$y =$ 7.71 billion

7. A computer valued at \$6500 depreciates at the rate of 14.3% per year. $r = .143$

a. Which formula from the top of the page would you use to solve the problem?

$y = P(1-r)^t$

b. Using the formula you chose in Part A, write an equation that models the situation over any given time, t.

$y = 6500(1-.143)^t$

c. Using your equation from part B, find the value of the computer after three years.

$y = 6500(1-.143)^3$

$y = \$4091.25$

Graphing practice! Graph the following functions and answer the questions that follow.

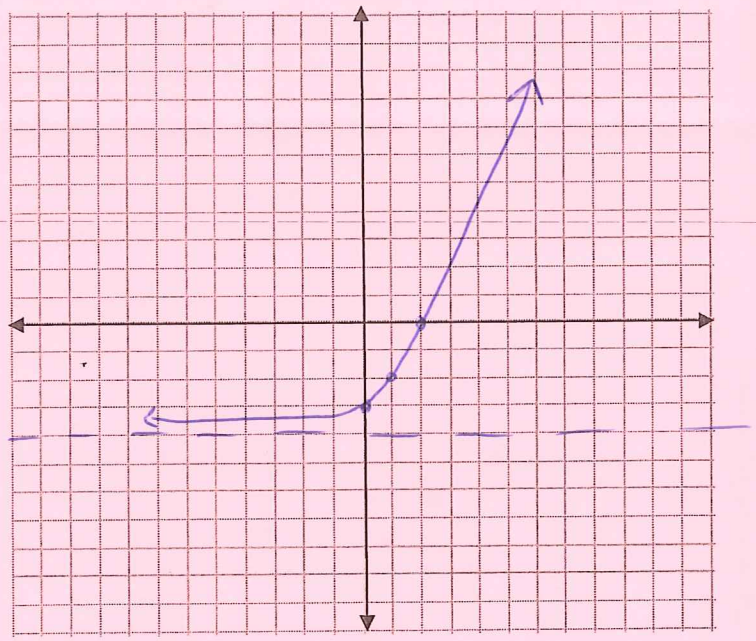
8. $y = 2(2)^{x-1} - 4$

Circle One: Growth / Decay

Describe the Transformations:

Stretch 2; Right 1; Down 4

x	y
0	-3
1	-2
2	0



Horizontal asymptote: $y = -4$

(Draw -- -- line on graph for HA)

y-intercept: $(0, -3)$

Domain: $(-\infty, \infty)$

Range: $(-4, \infty)$

9. $y = (2)^{x+2} + 5$

-2 6

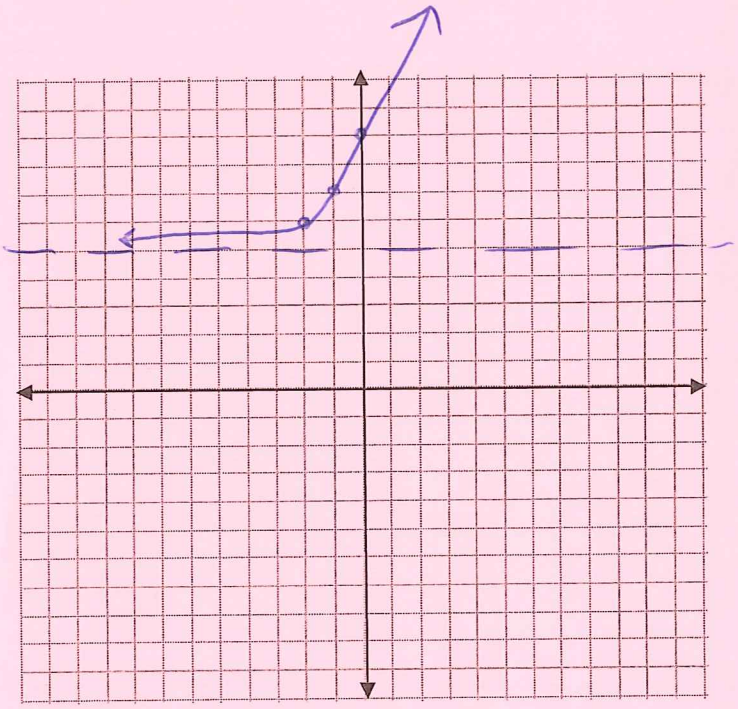
Circle One: Growth / Decay

Describe the Transformations:

Shift left 2

up 5

x	y
-1	7
0	9



Horizontal asymptote: $y = 5$

(Draw -- -- line on graph for HA)

y-intercept: $(0, 9)$

Domain: $(-\infty, \infty)$

Range: $(5, \infty)$