

Name: Key

Date: _____

Period: _____

Ch. 6 Test Review CYU Use when you get it right all by yourself*S* Use when you did it all by yourself, but made a silly mistake*H* Use when you could do it alone with a little help from teacher or peer*G* Use when you completed the problem in a group*X* Use when a question was attempted but wrong (get help)*N* Use when a question was not even attempted

CONCEPTS	BASIC	INTERMEDIATE	ADVANCED
Growth/Decay Factor (b)	1, 2		
Growth/Decay Rate (r)	1, 2	9, 10	
y-intercepts & Initial Value (a)	1, 2	9, 10	
Exponential Regression	1, 2	8, 9, 10	
Graphing Exponentials & Logarithmic	1, 2	3, 4, 5	
Describing Transformations		3, 4, 5	
Identifying Asymptotes	3, 4, 5		
Identifying Pivot Points	3, 4, 5		
Domain & Range in interval notation	6		
End Behavior		7	
Real-World Application			8, 9, 10
Predicting using Models		8, 9, 10	
Evaluating Logarithms			11
Expanding Logarithms			11
Condensing Logarithms			11
Solving Exponential Equations/Inequalities			12
Solving Logarithms Equations/Inequalities			12

Study Guide List:

Common Log
Natural Log
Common Log Base
Natural Log Base
Logarithmic Transformations
Exponential Transformations
Evaluating Logarithmic Expressions
Applying Logarithmic Properties
Writing Logarithmic Equations from a graph

Writing Exponential Equations from a graph
Exponential Regression
Solve Logarithmic Equations using Exponentials
Solve Exponential Equations using Logarithms
Logarithmic Application Problems
Exponential Application Problems

Notes, CYU, Dailies, Quiz Review, and Quizzes
will all help study!

1 - 2: For each table, decide if it's exponential growth or exponential decay. Then, identify the y-intercept (coordinate form) and the growth or decay **rate and factor**. Lastly, write an exponential equation, using regression on the calculator, and create a graph on the coordinate plane provided below.

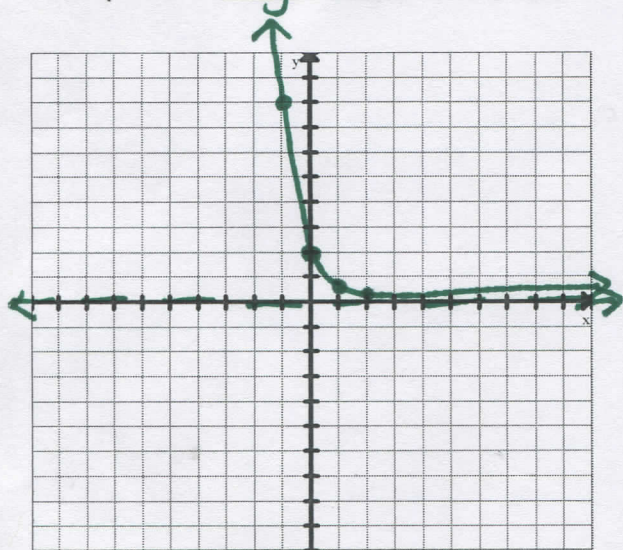
1. Growth or Decay

x	-2	-1	0	1	2
y	32	8	2	$\frac{1}{2}$	$\frac{1}{8}$

y-intercept: (0, 2)

G/D rate: 0.75 G/D factor: 0.25

equation: $y = 2(0.25)^x$



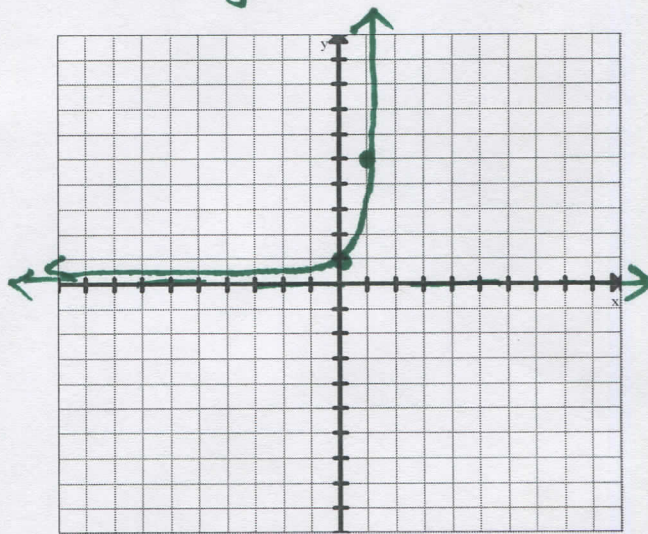
2. Growth or Decay

x	0	1	2	3	4
y	1	5	25	125	625

y-intercept: (0, 1)

G/D rate: 4 G/D factor: 5

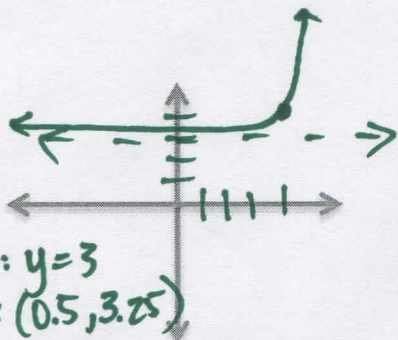
equation: $y = 1(5)^x$



3 - 5: State the transformations and **sketch** a graph of the parent and the new equation. Be sure to include the asymptote and pivot point on your graph!

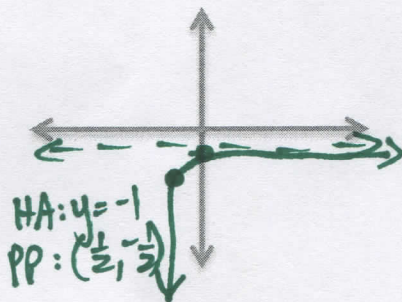
3. $f(x) = \frac{1}{4}(2)^{x-2} + 3$

$\rightarrow 2u$
 $\vee \frac{1}{4}$
 $\uparrow 3u$



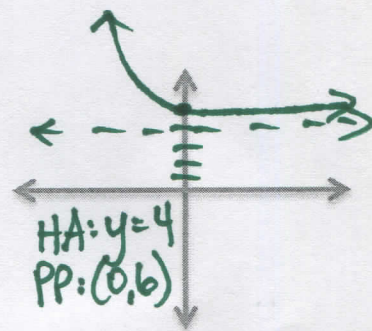
4. $g(x) = -\frac{1}{2}(6)^{-x-1} - 1$

Ry
 $\leftarrow 1u$
 Rx
 $\vee \frac{1}{2}$
 $\downarrow 1u$



5. $h(x) = 2\left(\frac{1}{4}\right)^x + 4$

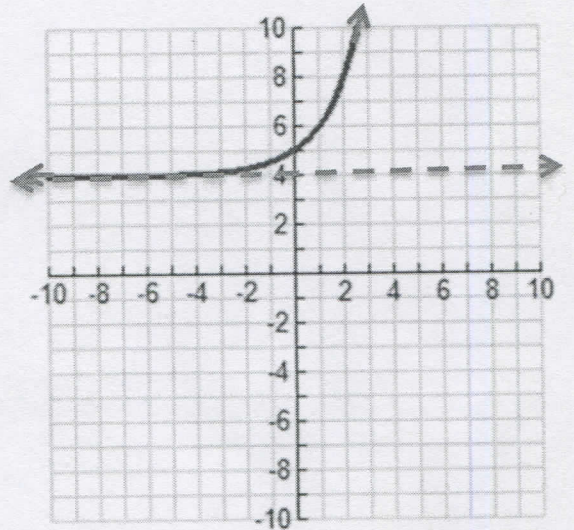
$\vee 2$
 $\uparrow 4u$



6. Given the graph, write the domain and range in interval notation.

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

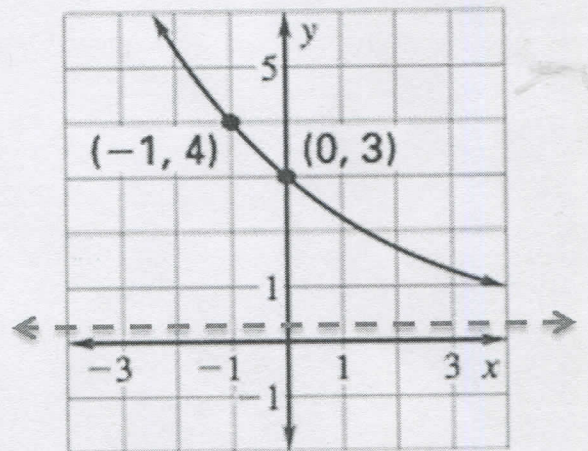
Range: $(4, \infty)$



7. Given the graph of the exponential decay function, describe the end behavior.

As $x \rightarrow \infty$, $y \rightarrow 0.5$.

As $x \rightarrow -\infty$, $y \rightarrow \infty$.

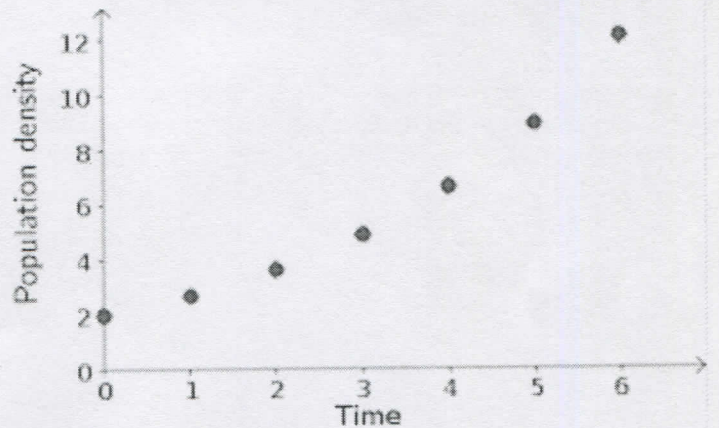


8. In the graph, the population density is an exponential function of time. Use the graph to write an equation and make a prediction. (HINT: create a T-chart from the graph!)

a. Equation: $y = 2.326(1.25)^x$

b. When the time value is 7, make a prediction of the population density using your equation from above.

$y = 11.091$



★ These can be off because of picking numbers from the graph that are not exact. ★

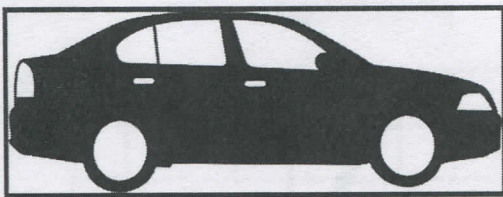
9. Mrs. Ramirez deposited \$10,000 into a money market account that is earning compound interest at a rate of 3% per year. This can be represented with $y = a(1 + r)^x$, where y is the total amount, a is the initial amount, r is the rate, and x is the time in years.

a. Identify each of the following: $a = \underline{10,000}$ $r = \underline{0.03}$

b. Write an equation: $y = \underline{10,000(1.03)^x}$

c. In 7 years, how much money will Mrs. Ramirez have in her account? $\underline{\$12,298.74}$

d. In 22 years, how much money will she have in her account? $\underline{\$19,161.03}$



10. A new car that originally costs \$21,000 depreciates 15% per year. This can be represented with the exponential decay function $y = a(1 - r)^x$, where y is the total amount, a is the initial amount, r is the rate, and x is the time in years.

a. Identify each of the following: $a = \underline{21,000}$ $r = \underline{0.15}$

b. Write an equation: $y = \underline{21,000(1-0.15)^x}$

c. Create a table to represent the depreciation value of the car over 7 years.

x	0	1	2	3	4	5	6	7
y	21,000	17,850	15,173	12,897	10,962	9,317.80	7,920.10	6,732.10

11. Evaluate the following logarithms. Expand or condense when appropriate.

a. $\log_3 27x^7$

$3 + 7(\log_3 x)$

b. $\log_7 \frac{b^2}{6}$

$2(\log_7 b) - \log_7 6$

c. $\log x + 3\log 2 - \log y$

$\log \frac{8x}{y}$

d. $\log_5 (6a)^3$

$3(\log_5 6 + \log_5 a)$

e. $3 \log 4 - 2(\log n + \log m)$

$\log \frac{64}{(nm)^2}$

f. $\frac{r \log d}{2}$

$\frac{\log d^r}{2}$

12. Solve the following equations and inequalities. Check for extraneous solutions.

a. $3.4e^{2-2n} - 9 = -4$

$$n = \frac{\ln \frac{5}{3.4} - 2}{-2}$$
$$\approx 0.807$$

b. $5 \cdot 6^{3m} = 20$

$$= \frac{\log 4}{\log 6}$$
$$\approx 0.258$$

c. $16^{n-7} + 5 < 24$

CRF $n < \frac{\log 19}{\log 16} + 7$

$$\approx n < 8.062$$

d. $-2\log_5 7x \geq 2$

$$x \geq \frac{1}{35}$$

e. $\log_{12}(v^2 + 35) = \log_{12}(-12v - 1)$

$$v = -6$$

f. $-6 \log_3(x - 3) = -24$

$$x = 84$$

CYU Reflection: How far can you go: basic, intermediate, or advanced?

Rate your mastery level!

How confident are you with the skills this CYU covered? Circle the score you would give yourself.

