Algebra H
8.5 – 8.6 Review Day 2 HW

Name: Key
Period:

MEMORIZE ME! $y = C(1 \pm R)^T$

1) A company starts with 50 employees and increases by 50% ($=0.5$) after one year. It continues to grow at the same rate for the next 4 years. How many employees does it have after 4 years?

a. Write an exponential growth model for this situation.

$y = 50(1.5)^t$

b. Calculate the number of employees after 4 years.

$y = 50(1.5)^4$

$\approx$ 253 employees

2) The average value of a single family home in Hinsdale, IL in 2000 was $490,000. The value of the home increase at a rate of about 6.7% per year. $= 0.067$

a. Write a function that models the value of the home over time.

$y = 490000(1.067)^t$

b. Find the average value of the house in 2012. $\Rightarrow t = 12$

$y = 490000(1.067)^{12}$

$\$1,067,011.53$

3) When you drive a New car out of a dealership it instantly begins to lose value. The value of a car will decrease at a rate of 15.5% annually. $\rightarrow 0.155$

a. Write a function that models the value a car over time. (think about what you DON'T know)

$y = C(1 - 0.155)^t$

so $y = C(.845)^t$

b. If you bought a new car in 2010 for $25000 and wanted to resell in in 2014, how much would expect it to be worth? $\Downarrow t = 4$

$y = 25000(0.845)^4$

$= \$12,745.79$

4) In 1985 there were 285 cell phone subscribers in the small town of Centersville. The number of subscribers increased by 75% per year after 1985.

a. Write a function that models how many cell phone subscribers there were over time.

$y = 285(1.75)^t$

b. How many Cell phone subscribers were in Centerville in 1994? 1994

$y = 285(1.75)^{t}$

b. How many Cell phone subscribers were in Centerville in 1994?

$y = 285(1.75)^{9}$

$\approx$ 43,872 subscribers

1994 − 1985 = 9 = t

For 5-8, decide if the following are **Growth** or **Decay**?

4. $y = 0.2\left(\frac{3}{4}\right)^{x}$ D

5. $y = (1.2)^{x}$ G

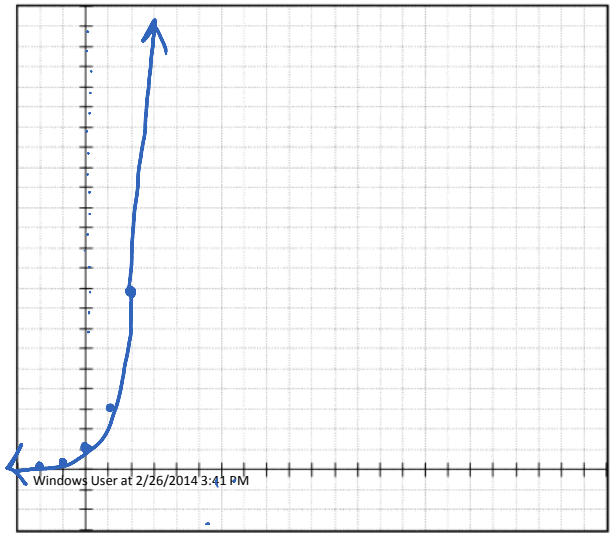
6. $y = 3 \bullet \left(\frac{5}{4}\right)^{x}$ G

7. $y = \left(\frac{3}{2}\right)^{-x} = \left(\frac{2}{3}\right)^{x}$ D

Graph the following Exponential Functions

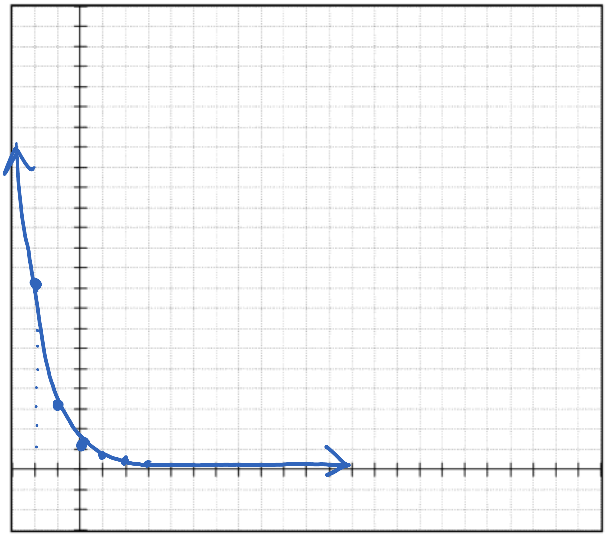
8) Function: $y = 3^{x}$

X	-2	-1	0	1	2	3
Y	1/9	1/3	1	3	9	27



9) Function: $y = \left(\frac{1}{3}\right)^{x}$

x	-2	-1	0	1	2	3
y	9	3	1	1/3	1/9	1/27



Decide if the following tables are exponential or Linear and then write the equation that corresponds with the table.

X	-1	0	1	2	3
Y	-12	-2	8	18	28

+1

X	-2	-1	0	1	2
Y	8	10.4	13.52	17.576	22.8488

+1 +1 +1

X	-1	0	1	2	3
Y	-12	-2	8	18	28

+10 +10

Linear

$y = 10x - 2$

X	-2	-1	0	1	2
Y	8	10.4	13.52	17.576	22.8488

×1.3

exponential

$y = 13.52(1.3)^x$

$\frac{10.4}{8} = 1.3$

$\frac{13.52}{10.4} = 1.3$