Mastery Algebra 1 Sample Mastery Quiz 7-6 Name:_____

Per: ____ ☐

7-6 Graphing Exponential Functions

Determine whether each rule represents exponential growth or decay. Explain how you know.

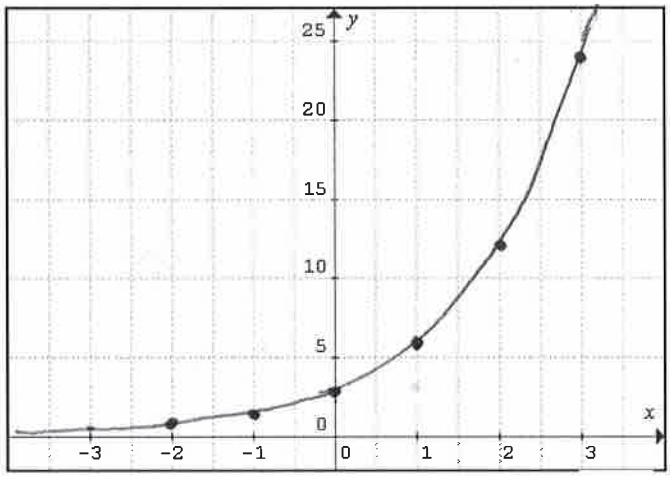
1. $y = 4 \cdot 3^x$

Exponential growth. The base (3), is greater than one.

(2)

3. Graph the exponential function $y = 3 \cdot 2^x$

x	Work	y
-2	$3 \cdot 2^{-2} = 3 \cdot \frac{1}{4}$	$\frac{3}{4}$
-1	$3 \cdot 2^{-1} = 3 \cdot \frac{1}{2}$	$\frac{3}{2}$
0	$3 \cdot 2^0 = 3 \cdot 1$	3
1	$3 \cdot 2^1 = 3 \cdot 2$	6
2	$3 \cdot 2^2 = 3 \cdot 4$	12
3	$3 \cdot 2^3 = 3 \cdot 8$	24



(4)

4. A computer valued at $1900 loses 25% of its value each year.

a. Write a function rule that models the value of the computer.

Value = $1900(.75)^y$

(1)

b. Find the value of the computer after 3 years.

Value = $1900(.75)^3$

$\approx \$83.95$

(1)

5. Suppose the population of a certain insect is modeled by the function $f(x) = 1600 \cdot 2^x$, where x is the number of years. How many insects will there be after 3 years? (Round to the nearest whole number)

$f(3) = 1600(2)^3$

$= 1600(8) = 12{,}800$

After 3 years, there will be 12,800 insects.

(2)