

Writing Exponential Functions

Day 2 HW

Name _____

Date _____ Block ____

EX:

| x | y |
|---|------|
| 0 | |
| 1 | |
| 2 | 158 |
| 3 | 790 |
| 4 | 3950 |

$3950 \div 790 = \underline{5}$, $790 \div 158 = \underline{5}$ so $b = \underline{5}$

Based on the value above, this function is an Exponential Growth or Exponential Decay?

It is an Exponential Growth since $b > 1$

To find the initial value, a, work backwards in the table until you find the value of y when x = 0.

$158 \div 5 = 31.6$, $31.6 \div 5 = 6.32$ Fill in the table.

This means the initial value $a = 6.32$

Write the Exponential equation in the form $y = a \cdot b^x$

$y = 6.32 \cdot (5)^x$

Write an exponential function for each table below using the steps above in Example 1.

1. _____

2. _____

3. _____

| x | y |
|---|----------|
| 0 | 12 |
| 1 | 34.8 |
| 2 | 100.92 |
| 3 | 292.668 |
| 4 | 848.7372 |

| x | y |
|---|------|
| 1 | 2 |
| 2 | 1 |
| 3 | .5 |
| 4 | .25 |
| 5 | .125 |

| x | y |
|---|----------|
| 2 | .846 |
| 3 | .2538 |
| 4 | .07614 |
| 5 | .022842 |
| 6 | .0068526 |

4.

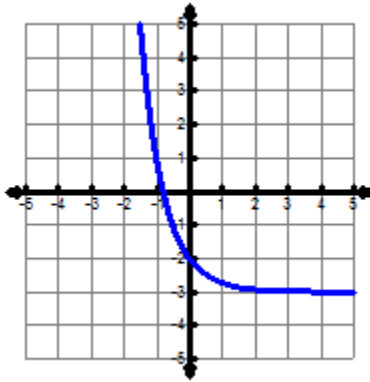
| | | | | |
|------------------|-----|------|-------|---------|
| Years since 2000 | 4 | 8 | 12 | 16 |
| Population | 336 | 5376 | 86016 | 1376256 |

Write an exponential function to represent population growth since the year 2000.

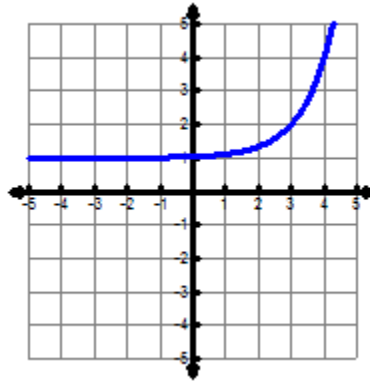
Practice- Practice- Practice- Practice- Practice- Practice- Practice- Practice- Practice- Practice! ☺

Determine whether each function below represents an Exponential Growth or Decay.

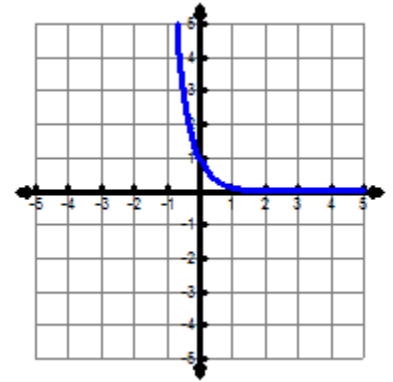
5. Growth or Decay?



6. Growth or Decay?



7. Growth or Decay?



8. Exponential Growth or Decay?

$$y = .1(7)^x$$

9. Exponential Growth or Decay?

$$y = 3(.25)^x$$

10. Exponential Growth or Decay?

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

11. Exponential Growth or Decay?

$$y = \frac{1}{2}\left(\frac{5}{3}\right)^x$$

12. Given $f(x) = 4(5.6)^x$, identify the growth/decay factor, growth/decay rate, and the initial value.

Growth/Decay Factor _____

Growth/Decay Rate _____

Initial Value _____

13. Given $f(x) = 11(.40)^x$, identify the growth/decay factor, growth/decay rate, and the initial value.

Growth/Decay Factor _____

Growth/Decay Rate _____

Initial Value _____

13. Given $f(x) = \left(\frac{1}{4}\right)^x$, identify the growth/decay factor, growth/decay rate, and the initial value.

Growth/Decay Factor _____

Growth/Decay Rate _____

Initial Value _____