FST Name:

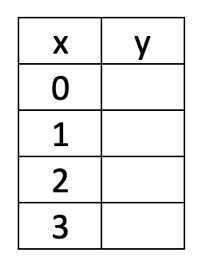
Notes 5.1 Date: Block:

***5.1 Exponential Growth and Decay Introduction***

Explore:

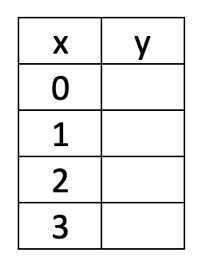
Graph the following functions using Desmos and fill in the corresponding table for the given x values. What do you notice each of the functions have in common? What is different?

1. 2.)



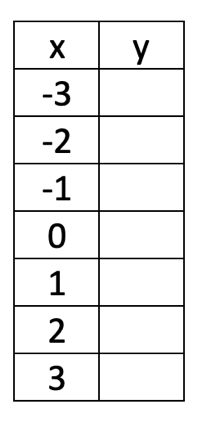
|  |  |
| --- | --- |
| x | y |
| 0 |  |
| 1 |  |
| 2 |  |
| 3 |  |

4.)



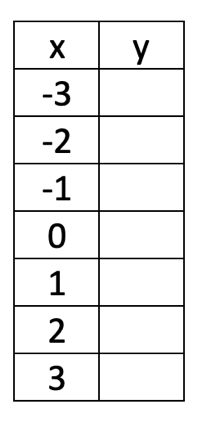
|  |  |
| --- | --- |
| x | y |
| 0 |  |
| 1 |  |
| 2 |  |
| 3 |  |

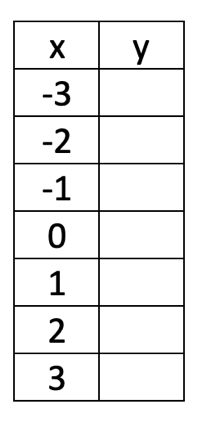
6.)



|  |  |
| --- | --- |
| x | y |
| -3 |  |
| -2 |  |
| -1 |  |
| 0 |  |
| 1 |  |
| 2 |  |
| 3 |  |

8.)





**Parent Function: Exponential Growth and Decay Functions**

**Example)** Label the following functions as exponential growth, exponential decay, or neither. Then give their grow/decay rate and their growth/decay factor.

**Example)** 10 bacteria were introduced into a culture. Every minute, the bacteria will split into two pieces. Write a function where x represents the number of minutes since the bacteria was introduced to the culture and y represents the total number of bacteria. Then graph the function.

**Example)** A population of wolves was reintroduced into Yellow Stone Park in 1995, changing the landscape of the full park. If the initial population of wolves was 6 wolves in 1995 and the population grew at a rate of 8% per year, write a function for the total number of wolves in the population based on the number of years since the wolves arrived in 1995. Sketch a graph of the function.

**Example)** Mr. Tomato purchased a new (to him) vehicle for $23,468. The vehicle is said to depreciate by a rate of 17% per year. Write a function for the value of the car based on the total number of years that Mr. Tomato has owned the car. Sketch a graph of the function.