**For exponential functions of the form,**

****

**the following characteristics exist:**

**Domain:** The values that we can put in for **\_\_\_\_\_**. Since the graph of every exponential function expands in **\_\_\_\_\_\_\_\_\_\_\_\_** directions (**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**), the domain of all exponential functions is **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** (\_\_\_\_\_\_).

**Horizontal Asymptote:** A dashed line that the exponential function approaches more and more closely, but **\_\_\_\_\_\_\_\_\_\_\_\_** touches. The equation of the asymptote is **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

**Range:** The values that we can get out for \_\_\_\_\_\_\_\_. Since a > 0, then the range is always \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

\*Because k is the value of the asymptote, the range can NEVER be **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** to k.

**X-Intercept:** The point where the graph crosses the x-axis (**\_\_\_\_\_\_\_\_\_\_\_**). To find the x-intercept algebraically, plug in zero for y and solve for x.

**Y-Intercept:** The point where the graph crosses the y-axis (**\_\_\_\_\_\_\_\_\_\_\_**). To find the y-intercept algebraically, plug in zero for x and solve for y.

**Intervals of Increase or Decrease**: Exponential functions can only do **\_\_\_\_\_\_\_\_\_** or the other…**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** both.

|  |  |
| --- | --- |
| **Increasing :** | **Decreasing :** |
|  |  |
| \*make sure to **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** increase or decrease! | |

**End Behavior:** What does **\_\_\_\_\_** approach as x becomes are larger **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** and larger **\_\_\_\_\_\_\_\_\_\_\_\_\_** number?

|  |  |
| --- | --- |
| **Exponential Growth:** | **Exponential Decay:** |

**Example: Describe the characteristics for the exponential function.**

|  |  |
| --- | --- |
|  | |
| **Domain: \_\_\_\_\_\_\_\_\_\_\_**  **Horizontal Asymptote:**  **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **Range: \_\_\_\_\_\_\_\_\_\_\_\_\_**  **X-Intercept; \_\_\_\_\_\_\_\_\_**  **Y-Intercept: \_\_\_\_\_\_\_\_\_** | **Interval of Increase or Decrease:**  **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **End Behavior:** |

**Example: Describe the characteristics for the exponential function.**

|  |  |
| --- | --- |
|  | |
| **Domain: \_\_\_\_\_\_\_\_\_\_\_**  **Horizontal Asymptote:**  **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **Range: \_\_\_\_\_\_\_\_\_\_\_\_\_**  **X-Intercept; \_\_\_\_\_\_\_\_\_**  **Y-Intercept: \_\_\_\_\_\_\_\_\_** | **Interval of Increase or Decrease:**  **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **End Behavior:** |

**Example: Describe the characteristics for the exponential function.**

|  |  |
| --- | --- |
|  | |
| **Domain: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **Horizontal Asymptote:**  **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **Range: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **X-Intercept; \_\_\_\_\_\_\_\_\_\_\_\_**  **Y-Intercept: \_\_\_\_\_\_\_\_\_\_\_\_** | **Interval of Increase or Decrease: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **End Behavior:** |