HN Math III Notes Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Unit 2 Day 7: Graphing Exponential and Logarithmic Functions

**![MCj04382150000[1]]()**

 **Part I:**



 **Part 2:**

 **Horizontal Asymptote:** an “invisible” line that the graph of a function approaches.

Identify the horizontal asymptote of (a): Identify the horizontal asymptote of (b):

Identify the y-intercept of (a): Identify the y-intercept of (b):

End behavior: End Behavior:

**Transforming Exponential Functions**

**Translate left or right:**

**Vertical stretch or compression:**

**Horizontal stretch or compression:**

**Reflections:**

**Translate up or down:**

**Part 3: Describe the transformation using the function f(x) = 2x as the parent function. Then graph the function. For each, identify the domain, range, y-intercept, the asymptote, and the end behavior as x🡪** $\infty $ **and -**$\infty $ **and the horizontal asymptote.**

3.

2.

1.

 **Domain: \_\_\_\_\_\_\_\_\_\_ Domain: \_\_\_\_\_\_\_\_\_\_\_ Domain: \_\_\_\_\_\_\_\_\_\_\_**

 **Range: \_\_\_\_\_\_\_\_\_\_\_ Range: \_\_\_\_\_\_\_\_\_\_\_\_ Range: \_\_\_\_\_\_\_\_\_\_\_\_**

 **Y-Intercept: \_\_\_\_\_\_\_\_ Y-Intercept: \_\_\_\_\_\_\_\_\_ Y-Intercept: \_\_\_\_\_\_\_\_\_**

 **Asymptote: \_\_\_\_\_\_\_\_\_ Asymptote: \_\_\_\_\_\_\_\_\_\_ Asymptote: \_\_\_\_\_\_\_\_\_\_**

 **End Behavior: \_\_\_\_\_\_\_ End Behavior: \_\_\_\_\_\_\_\_\_ End Behavior: \_\_\_\_\_\_\_\_**

 **\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_**

**Part 4: Graphing and Transforming Logarithmic Functions**

The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ function is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the exponential function.

**Now let’s use** $f(x)=2^{x}$ **to explore its inverse,** $f^{-1}\left(x\right)=log\_{2}x$

1. Complete the table to get the characteristic points of $f(x)=2^{x}$ and then sketch the graph.

|  |  |
| --- | --- |
|  $x$ | $$f\left(x\right)=2^{x}$$ |
| –1 |  |
| 0 |  |
| 1 |  |
| 2 |  |

Asymptote: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Domain: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Range: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Graph 

1. Complete the table to get the characteristic points of $f^{-1}\left(x\right)=log\_{2}x$ and then sketch the graph.

|  |  |
| --- | --- |
| $$x$$ | $$f^{-1}\left(x\right)=log\_{2}x$$ |
|  | –1 |
|  | 0 |
|  | 1 |
|  | 2 |

Asymptote: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Domain: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Range: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Domain: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Range: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Asymptote: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. Graph  5. Graph 

Domain: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Domain: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Range: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Range: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Asymptote: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Asymptote: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Part 5: Solve Graphically (Show a sketch as your work)**

1. Solve: $log\_{3}\left(x-4\right)=-log\_{5}x$ 2. Solve: $log\_{2}\left(3x+5\right)=4^{x}$