#### 4-3 Graphing Exponentials

4-3a: I can graph exponential functions using transformations and points.

4-3b: I can identify the asymptote of an exponential function.

#### Recall the graph of $f(x)=2^x$ .



Vocab: Asymptote



What do you notice about the y-intercepts? (when x = 0)

What happens when x = 1? (If you can't see the pattern after  $2^x$  and  $3^x$  try looking at  $4^x$  too.)

Where is the asymptote for these graphs?

<sup>★</sup>Key parts to all exponential parent graphs:<sup>★</sup>

- 1) There is a point at (0,1).
- 2) There is a point at (1, base)
- 3) There is a horizontal asymptote at y = 0.

 $\star$ These pieces will change with the transformations.

State the domain, range, increasing, decreasing, asymptote, and end behavior.



Range: Increasing: Decreasing: Asymptote: End Behavior:

Graph each function using transformations and points. Write the equation of the asymptote.



Graph each function using transformations and points. Write the equation of the asymptote. You try!





Graph each function using transformations and points. Write the equation of the asymptote.

