## 4-3 Graphing Exponential Functions copy (2).notebook

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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 $f(x)=2^{x}$.

| $x$ | $f(x)=2^{x}$ |
| :---: | :---: |
| -3 |  |
| -2 |  |
| -1 |  |
| 0 |  |
| 1 |  |
| 2 |  |
| 3 |  |



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Now consider the graph of $f(x)=3^{x}$.

| $x$ | $f(x)=3^{x}$ |
| :---: | :---: |
| -3 |  |
| -2 |  |
| -1 |  |
| 0 |  |
| 1 |  |
| 2 |  |
| 3 |  |


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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?

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$\sqrt{2}^{2}$ Key parts to all exponential parent graphs: ${ }^{\boldsymbol{\mu}}$

1) There is a point at $(0,1)$.
2) There is a point at (1, base)
3) There is a horizontal asymptote at $\mathrm{y}=0$.
${ }^{3}$ These pieces will change with the transformations.

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


## 4-3 Graphing Exponential Functions copy (2).notebook

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

$$
f(x)=2^{x+3} \quad f(x)=2^{x}-4
$$


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

You try!
$f(x)=3^{x+1}-1$
$f(x)=4^{x-2}-3$



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

You try!
$f(x)=3(2)^{x}$
$f(x)=2(4)^{x}-3$



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

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[^0]:    Vocab: Asymptote

