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| 1. a. Using the table of values, then draw each exponential function. |
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| --- | --- | --- | --- | --- |
| **x** | $$y=2^{x}$$ |  | **x** | $$y=3^{x}$$ |
| -3 | $$2^{-3}=1/8$$ | -3 |  |
| -2 |  | -2 |  |
| -1 |  | -1 |  |
| 0 |  | 0 |  |
| 1 |  | 1 |  |
| 2 |  | 2 |  |
| 3 |  | 3 |  |

**cart2.PNG** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **x** | $$y=(\frac{1}{2})^{x}$$ |  | **x** | $$y=(\frac{1}{3})^{x}$$ |
| -3 | $$(\frac{1}{2})^{-3}=8$$ | -3 |  |
| -2 |  | -2 |  |
| -1 |  | -1 |  |
| 0 |  | 0 |  |
| 1 |  | 1 |  |
| 2 |  | 2 |  |
| 3 |  | 3 |  |

**cart2.PNG** |
| b. What is y-intercept for each of the graphs? Label it on the plane.c. As the x values increase what do you notice about the y values? d. As the x values decrease what do you notice about the y values?d. Do you think this graph will ever intersect with y =0 line (x axis)?f. State the domain and range:

|  |  |
| --- | --- |
| $$y=2^{x}$$ | $$y= 3^{x} $$ |
| D: | D: |
| R: | R: |

g. What are the common characteristics of these curves? | b. What is y-intercept for each of the graphs? Label it on the plane.c. As the x values increase what do you notice about the y values? d. As the x values decrease what do you notice about the y values?d. Do you think this graph will ever intersect with y =0 line (x axis)?f. State the domain and range:

|  |  |
| --- | --- |
| $$y=(\frac{1}{2})^{x}$$ | $$y=(\frac{1}{3})^{x}$$ |
| D: | D: |
| R: | R: |

g. What are the common characteristics of these curves? |

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| **Notes about Exponential Functions**The exponential function  is to be added to our list of parent functions.Exponential functions can be used to model population **growth** or the temperature of a liquid as it cools off.When b > 1, the exponential function decreases to the left and increases to the right. This is called exponential growth.When 0 < b < 1, the exponential function increases to the left and decreases to the right. This is called exponential decay.The x-axis is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for all 4 graphs.The equation of this line is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.The domain of  is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.The range of  is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.The y-intercept of  is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. |