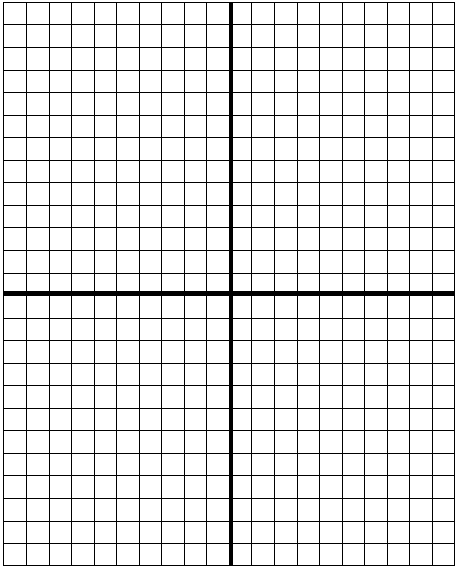
**Graphs of Exponential Functions Investigation**

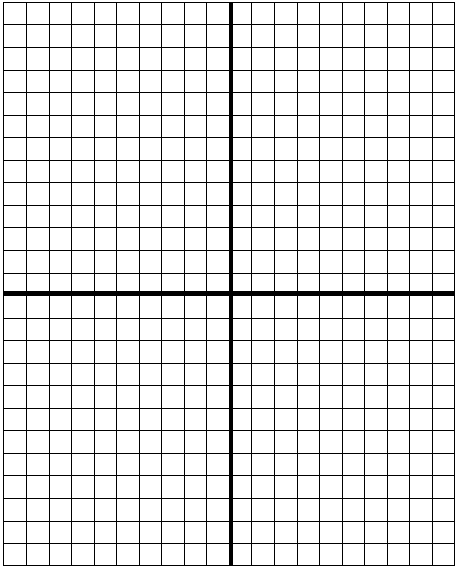
You may use your graphing calculator to help you with your sketches

1. On the same set of axes, sketch the following functions:
   1. b. c. d.



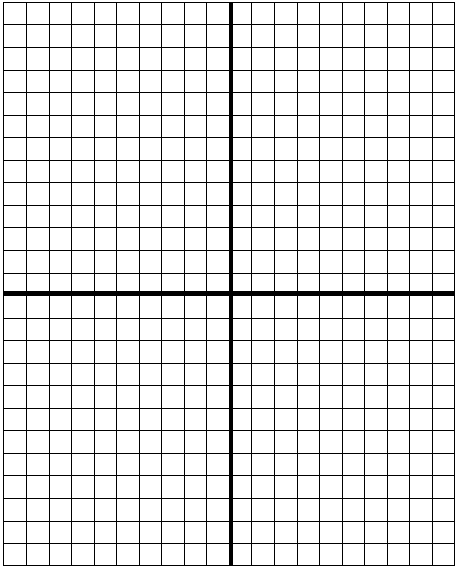
These functions are all members of the family

1. What effect does changing b have on the shape of the graph?
2. What is the y-intercept of each graph?
3. What is the horizontal asymptote of each graph?
4. On the same set of axes, sketch the following functions:
   1. b. c.



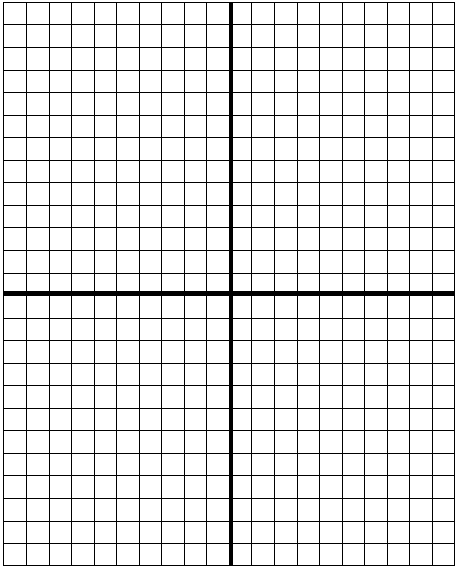
These functions are all members of the family , where d is a constant

1. What effect does changing d have on the position of the graph?
2. What effect does changing d have on the shape of the graph?
3. What is the horizontal asymptote of each graph?
4. What is the horizontal asymptote of
5. To graph from what transformation is used?
6. On the same set of axes, sketch the following functions:
   1. b. c. c.



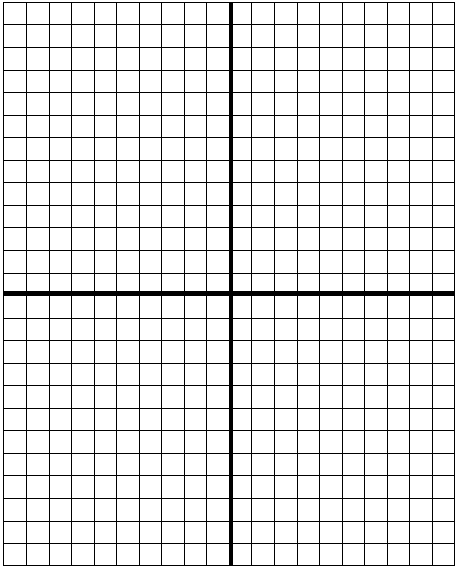
These functions are all members of the family

1. What effect does changing c have on the position of the graph?
2. What effect does changing c have on the shape of the graph?
3. What is the horizontal asymptote of each graph?
4. What is the horizontal asymptote of
5. To graph from what transformation is used?
6. On the same set of axes, sketch the following functions:
   1. b.



* 1. What is the y-intercept of each graph?
  2. What is the horizontal asymptote of each graph?
  3. What transformation moves to ?

1. On the same set of axes, sketch the following functions:
   1. b. c.
   2. e. f.



These functions are all members of the family

1. What effect does changing c have on the position of the graph?
2. What effect does changing c have on the shape of the graph?
3. What is the horizontal asymptote of each graph?
4. What is the horizontal asymptote of
5. To graph from what transformation is used?

In general, fill out the following:

For the general exponential function

* b controls\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* c controls\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* d controls\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* y = d is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

For each of the following state if they are increasing or decreasing and draw the shape of the graph

* if , the function is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* if , the function is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* if , the function is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* if , the function is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Draw freehand sketches of the following pairs of graphs using your observations:



