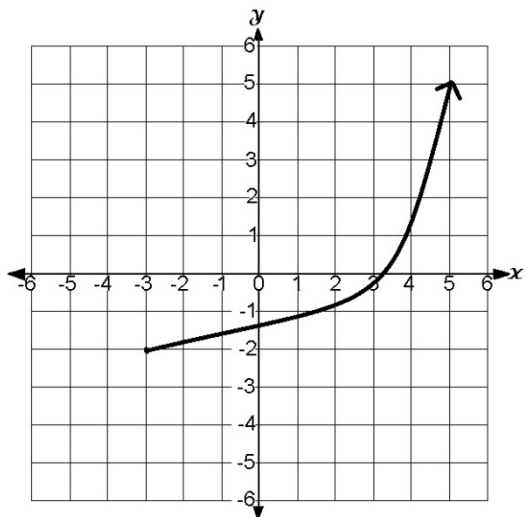# MAC 1105 Pre-Class Assignment (due 5/20 by 11:59pm):

INTERVAL NOTATION

This graph is made up of infinitely many (x, y) coordinate points.
For every x which is the input into the equation there is a y which is an output of the equation.

1) What does the arrow of the graph mean?

2) What is the x-coordinate of the starting point of the graph?

3) What is the x-coordinate of the ending point of the graph?

4) Given your answer to the above questions, what is the interval of the x values where the graph exists?

Notice we have a collection of numbers where something interesting is happening. We use intervals to set boundaries on regions of interest.

An interval represents the set of all real numbers between two given points.
-If the beginning and end points a and b are <u>finite</u> and are included, the interval is called <u>closed</u> and is denoted [a, b]
-If the beginning and end points are not included, the interval is called <u>open</u> and is denoted (a, b)
. -The interval is called a <u>half-closed</u> (or half-open interval) if the
    a. beginning point a is included but not the other, the interval is denoted _____
   *b. endpoint b is included but not the other, the interval is denoted _____*
5. In our example above did the graph have an end point? If so, what did you call it?

6. Is it finite? Explain.

7. Use your answer above to justify why you would use ")" for this end point and not"]"

8. Use the number line below to show the region "all numbers between positive one and positive five, including the one but not the five"

Number line.
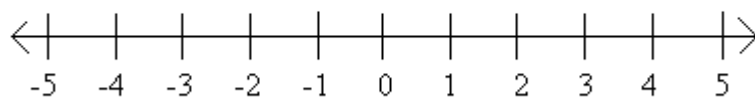
9. In the number line above, what did you do to represent:
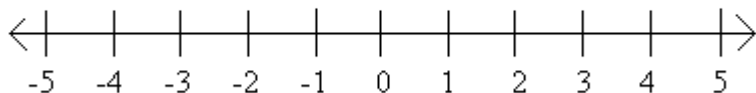   a. Including 1 in the interval?

   b. Excluding 5 from the interval?

   c. How would you write this region in interval notation?

   d. Is 3.75 included in that interval?

11. Draw on the number line below the region given by the interval notation $(-\infty, 1]$

Number line.

12. What did you do on the number line to represent the endpoint(s)?

13. Write the interval notation to express the set of "all the x values less than or equal to -2 or greater than 5"