In this section we will discuss

* Graphing logarithmic functions.
* Equivalent Equations
* Solving some Logarithmic Equations

What is a logarithmic function?

It is the inverse of an exponential function!!

Consider

 Is this a function? \_\_\_\_\_\_ Is it a 1-1 function? \_\_\_\_\_\_\_ So will the inverse be a function? \_\_\_\_\_\_\_\_\_\_



to find the inverse we \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the \_\_\_\_ & \_\_\_\_ variables.

Switching the variables we get

Label each equation which is graphed on the right:

This is really what we are calling the log base 2.

 This says the base number (2) raised to the y value gives you the number x.

Note: is read “the log base 2 of x” and means “the exponent to which we raise 2 to get x.”

So if

Then

 is just a notation we use to say .

And it is the inverse of

Meaning:

Ex: Rewrite each as an equivalent logarithmic equation:

a) b)

Quickly, on the same graph sketch the graphs of .



Now sketch the graphs of on the same graph above.

Ex: Label some possible functions that these graphs could represent if they were sketched.



## Solving Certain Logarithmic Equations

Ex: Solve the following:

 a) b) c)

Ex:

\_\_\_\_ & \_\_\_\_

Ex: Solve:

a) b) c)