

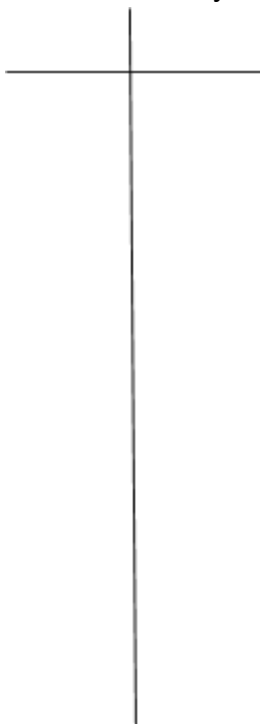
### 5.2.1 How can I undo an exponential function?

The Inverse of an Exponential Function

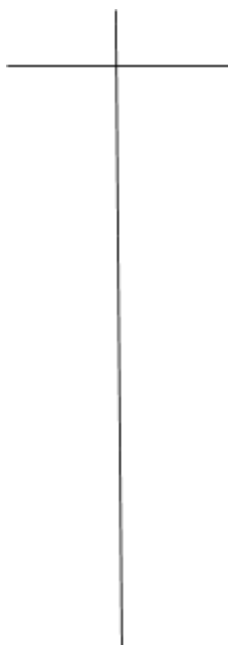


#### #53 THE INVERSE EXPONENTIAL FUNCTION

a. Make a table for  $y = 3^x$ .

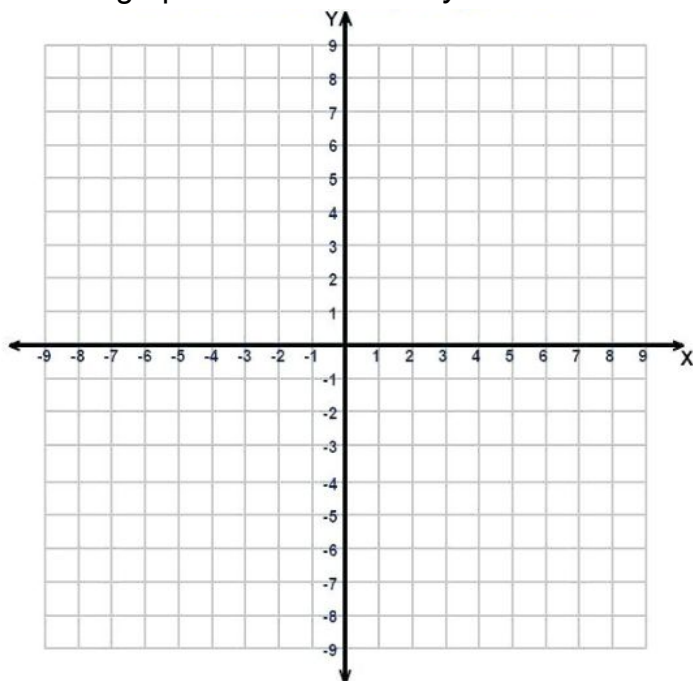


b. Make a table for the inverse of  $y = 3^x$ .



d. If the input for the inverse function is 81, what is the output? Explain your reasoning.

c. Sketch a graph of the inverse of  $y = 3^x$ .



e. Using your answers from parts (a) through (c), if you input any number for  $x$  into the inverse function, how can you describe the output?

**#54 AN ANCIENT PUZZLE**

Here are some clues to help you figure out how the puzzle works:

$$\log_2(8) = 3$$

$$\log_3(27) = 3$$

$$\log_5(25) = 2$$

$$\log_{10}(10,000) = 4$$

Use the clues to determine the missing pieces of the puzzles below:

a. $\log_2(16) = ?$	b. $\log_2(32) = ?$
c. $\log_7(100) = 2$	d. $\log_5(?) = 3$
e. $\log_7(81) = 4$	f. $\log_{100}(10) = ?$

**Write the equivalent exponential form to the logs you solved in problem #54**

a.	b.
c.	d.
e.	f.

**#55** How is the Ancient Puzzle related to the inverse function for  $y = 3^x$  in problem 5-53? Show how you can use the idea in the Ancient Puzzle to write an equation in  $y =$  form for the inverse function of  $y = 3^x$ .

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