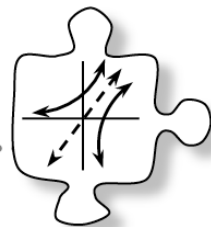


5.3 What can I learn about logs?



Investigating the Family of Logarithmic Functions

In the last two lessons you have learned what a log is and how to convert an equation in log form to exponential form (and back again). In this lesson, you will explore logs as a family of functions.

- **5-81. INVESTIGATING THE FAMILY OF LOGARITHMIC FUNCTIONS**

You have learned that a logarithm is the inverse of an exponential function. Since exponential functions can have different bases, so can logarithms. Investigate the family of logarithmic functions $y = \log_b(x)$. The questions below will help you investigate. Explore using [Log & Exponential Graphs](#) (Desmos).

- **Your Task:** Generate data with your team and use it to write summary statements about this family of functions. For each summary statement you find, prepare a poster that shows and explains the summary statement and be prepared to present it to the class. Remember that summary statements should always include thorough justification.

Discussion Points

How can we collect data for this family? How much data is enough?

What have we learned about logs and inverses that can help us work with this family? How can “DrawInv” help?

What patterns can we find in our data? Why do they happen?

What are all the possible inputs for our function? Are there some x -values that do not make sense? Why or why not? How do these results appear in different mathematical representations?

What are some characteristics that all logarithmic functions have in common?

What happens as the value of b changes? What values of b make sense?