



Exponential vs. Power

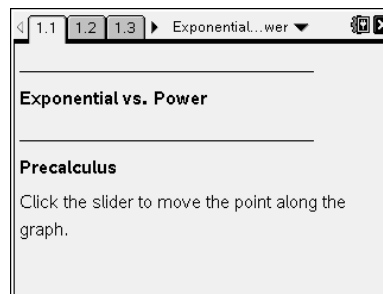
Student Activity

Name _____

Class _____

Open the TI-Nspire document *ExponentialVsPower*.

Which is greater for large values of x , an exponential function or a power function? In this activity, you will use a real-world application to examine both types of functions.



Move to page 1.5.

Press **ctrl** ◀ and **ctrl** ▶ to navigate through the lesson.

Jorge is a wildlife conservationist who monitors the population of white herons in a wildlife refuge. In his first year, he only found three white herons. Since then, he has observed the population has tripled each year.

If the tripling trend continues, the population of herons can be graphed using the exponential function graphed on page 1.4, $y = 3^x$, where y represents the number of herons and x represents the time, in years.

1. Click the slider to move the point along the graph and fill in the table below.

Time (x)	0	1	2	3	4
Herons (y)					

2. Why do the values of y become very small for negative values of x ?
3. What is the domain of the function, $y = 3^x$? The range?
4. Describe the end behavior of the function $y = 3^x$.



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Move to page 2.1.

Suppose after a couple years, Jorge notices that a population of wild geese seems to be increasing at the rate of the function on page 2.2, where x is the time in years and y is the population of wild geese.

5. Click the slider to move the point along the graph and fill in the table below.

Time (x)	2	3	4	5
Population (y)				

6. What is the domain of the function $y = x^3$? The range?

7. Describe the end behavior of the function $y = x^3$.

8. Use the information you gathered to compare and contrast the two functions.

9. When are the populations the same? When do they diverge?