

BIG IDEAS

For Your Notebook

Big Idea 1

Applying Properties of Exponents to Simplify Expressions

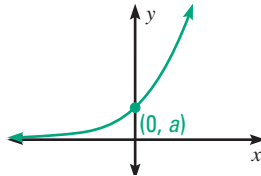
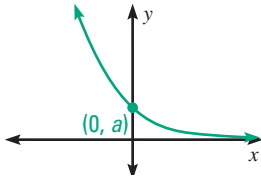
You can use the properties of exponents to simplify expressions. For the properties listed below, a and b are real numbers, and m and n are integers.

Expression	Property
$a^m \cdot a^n = a^{m+n}$	Product of powers property
$(a^m)^n = a^{mn}$	Power of a power property
$(ab)^m = a^m b^m$	Power of a product property
$\frac{a^m}{a^n} = a^{m-n}, a \neq 0$	Quotient of powers property
$\left(\frac{a}{b}\right)^m = \frac{a^m}{b^m}, b \neq 0$	Power of a quotient property

Big Idea 2

Writing and Graphing Exponential Functions

You can write and graph exponential growth and decay functions. You can also model real-world situations involving exponential growth and exponential decay.

Exponential growth	Exponential decay
Function $y = ab^x, a > 0$ and $b > 1$	Function $y = ab^x, a > 0$ and $0 < b < 1$
Graph 	Graph 
Model $y = a(1 + r)^t$	Model $y = a(1 - r)^t$