How do you determine if a set of data represents an exponential function?

For example:

x	f(x)
-1	0.667
0	1
1	1.5
2	2.25
3	3.375

$f(x) = 1.5^x$

LEARNZILLION

In this lesson you will learn how to write and graph an exponential function by examining a table that displays an exponential relationship.

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Let's Review

1st Difference

	x	y	
	0	6	
1 <	1	4	> -2
1 <	2	2	> -2
1 <	3	0	> -2

1st difference is a constant of -2.

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Let's Review

Exponential Functions

$$f(x) = ab^x$$

a = initial amount/start value ($a > 0$)

b = common ratio ($b > 0$, $b \neq 1$)

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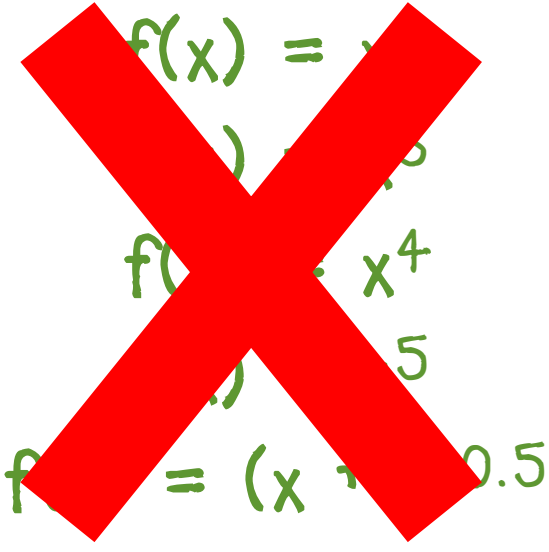
A Common Misunderstanding

Exponential Functions



$f(x) = 2^x$

$f(x) = 3^x$

$f(x) = 4^x$

$f(x) = 5^x$

$f(x) = 0.5^{x+1}$

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Core Lesson

Identifying an Exponential Relationship From a Table

x	f(x)
-1	$\frac{2}{3}$
0	2
1	6
2	18
3	54

1st Difference

$\frac{4}{3}$, 4, 12, 36

2nd Difference

$\frac{8}{3}$, 8, 24

1, 1, 1, 1

Common Ratio between y-values is 3.

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Core Lesson

Writing an Exponential Equation

x	f(x)
-1	$\frac{2}{3}$
0	2
1	6
2	18
3	54

x3

x3

x3

x3

$f(x) = ab^x$

$a = 2$

$b = 3$

$f(x) = 2(3)^x$

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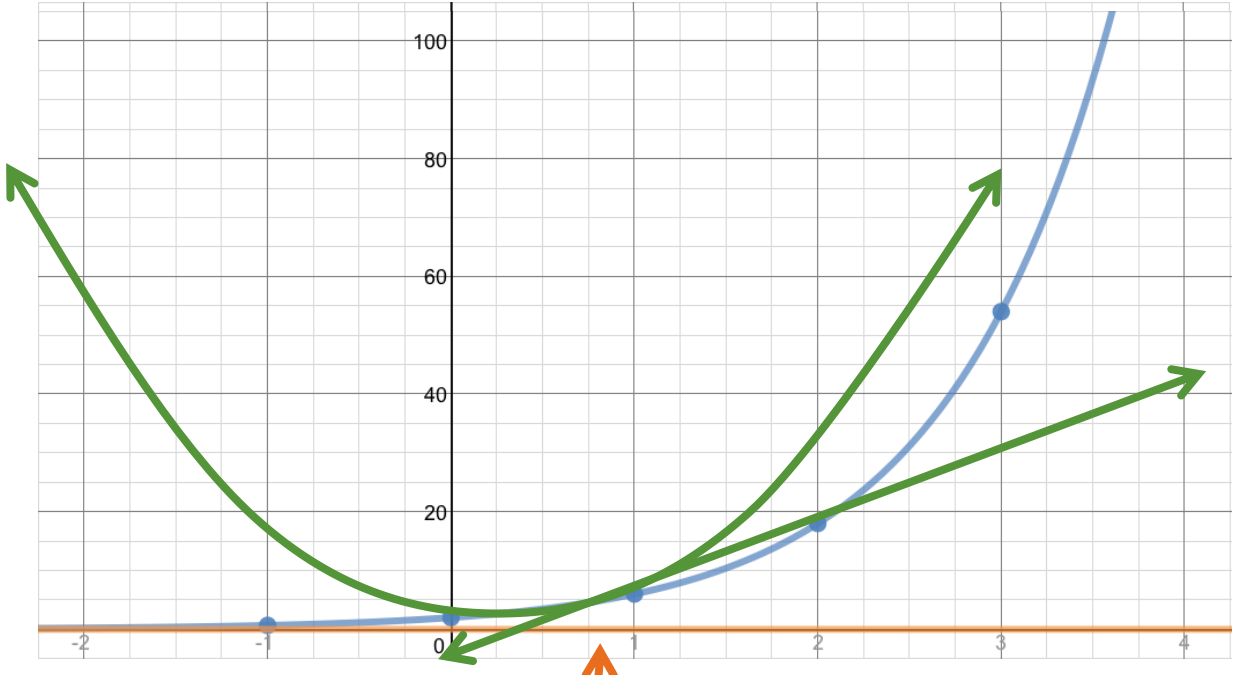
Core Lesson

Graphing Exponential Functions

$$f(x) = 2(3)^x$$

x	f(x)
-1	$\frac{2}{3}$
0	2
1	6
2	18
3	54



Asymptote at y = 0

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In this lesson you have learned how to write and graph an exponential function by examining a table that displays an exponential relationship.

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