Activator

Which line is straight? The left Why?

There is no exponent in the function/equation.

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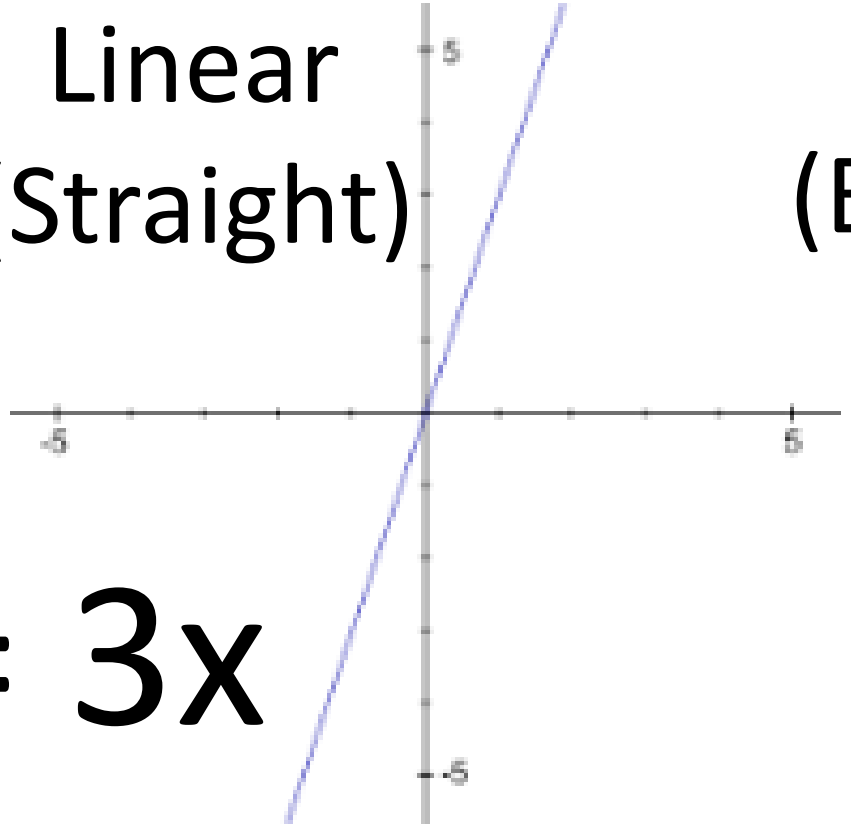
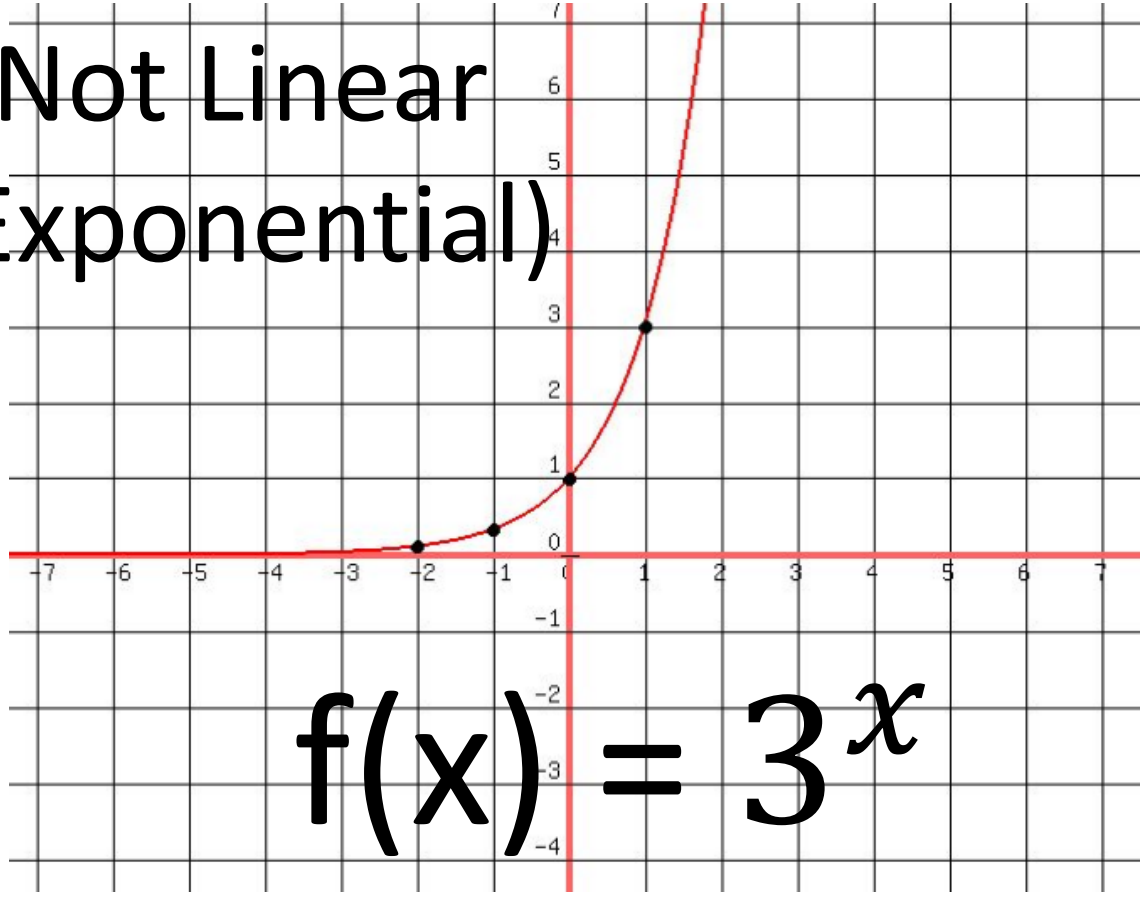
Linear
(Straight)



$f(x) = 3x$

Not Linear
(Exponential)



$f(x) = 3^x$

Today's Objective

Unit 6
Lesson 3

Students will be able to graph exponential functions.



Announcements

Today's New Vocab (1 of 4)

What are exponential equations? $y = B\,(C)^x$

Curved lines with an exponent.

Example $y = 2^x$ or $f(x) = 2^x$

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B = is the beginning and initial value (0,B) and where the graph crosses the y-axis.

What is initial value (0, 1)

when $f(x) = 2^x$? B = 1

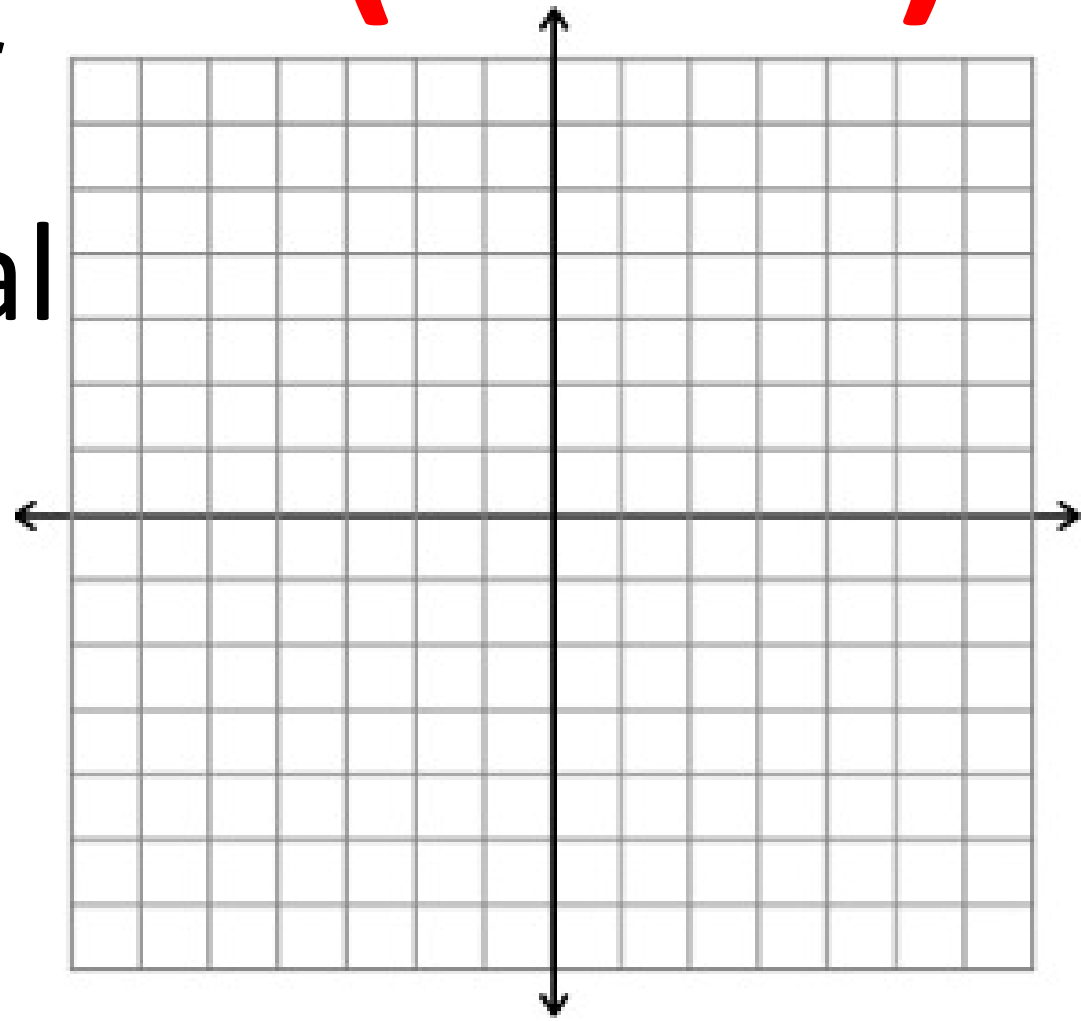
x	f(x)
0	1

B

Today's New Vocab (2 of 4)

Create a graph for $y = 2^x$ over the interval $0 \le x \le 3$.

x	f(x)
0	1
1	2
2	4
3	8



B

(2)

(2)

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C = 2

Common (multiplier).

Today's New Vocab (3 of 4)

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

$y = B\ (C)^x$

What is f(3)?

f(3) = 8

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Lesson 6.3

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

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

$f(3) = (2)(2)(2)$

f(3) = 8

What is the common multiplier? C = 2

Today's New Vocab (4 of 4)

Does the function model growth or decay?

$f(x) = (2)^x$ Growth. Why? C > 1

The graph goes up.

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$f(x) = \left(\frac{1}{2}\right)^x$ Decay. Why? C < 1

The graph goes down.

A multiplier of (1) keeps any number the same.

Group Work Questions

Pages 11-12
Lesson 6.3

Directions: All groups, please do all of the questions. Use your notes to help you. [Ask 2 people before you ask me.]

Stop at 9:26 or 10:56 or 12:50 or 2:15

Do a few questions on the study guide if you finish early.

*One person from each group will present one question.

WP

Create a table and graph for $f(x)= 4\left(\frac{1}{2}\right)^x$ over the interval $-1 \leq x \leq 2$.

Is this a linear function?

No, Why?

The line curves.

x	f(x)	
-1	8	$\left(\frac{1}{2}\right)$
0	4	$\left(\frac{1}{2}\right)$
1	2	$\left(\frac{1}{2}\right)$
2	1	

Exit Ticket

What is f(4) for each function?

Quadratics (Unit 7)
Number Exponent

$f(x) = x^3$

$f(4) = (4)^3$

$f(4) = (4)(4)(4)$

$f(4) = 64$

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Lesson 6.3

Exponents (Unit 6)
Variable Exponent

$f(x) = 3^x$

$f(4) = 3^{(4)}$

$f(4) = (3)(3)(3)(3)$

$f(4) = 81$