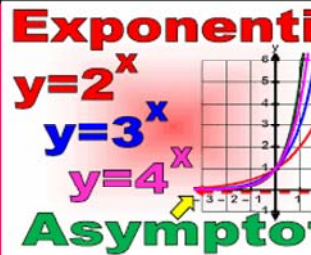


Unit 2

Exponents and Logarithms



4.4 Exponential Regressions

Our calculators can give us an exponential function if we have a table of values. This is called an *exponential regression*. Learn the steps for your specific calculator.

Ex.) Determine if the following tables of values are exponential. If they are, determine the exponential regression function.

a)

x	y
0	0.0
1	5.1
2	10.2
3	15.3
4	20.4
5	25.5

no, linear

b)

x	y
0	1.00
1	2.50
2	6.25
3	15.62
4	39.06
5	97.66

yes,
exponential

c)

x	y
-3	-2.25
-2	-1.00
-1	-0.25
0	0.00
1	-0.25
2	-1.00

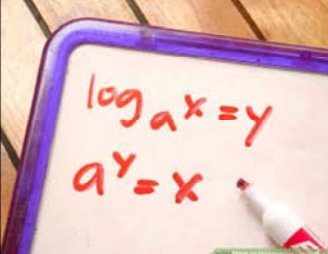
no, quadratic

d)

x	y
2	32
3	108
4	256
5	500
6	864
7	1372

no

 <p>$\log_a x = y$ $a^y = x$</p>	<p>Unit 2</p> <p>Exponents and Logarithms</p>	<p>Exponenti</p> <p>$y=2^x$ $y=3^x$ $y=4^x$</p>  <p>Asymptote</p>
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Unit 2

Exponents and Logarithms


Exponenti

$y=2^x$

$y=3^x$

$y=4^x$

Asymptote



2. Researchers have been studying algae growth on small lakes and ponds in southern Manitoba. They measured the percentage of the surface of a pond that was covered by algae at fixed time intervals, as shown below.

L1
x
y
L2

Week	0	1	2	3	4	5
Pond Surface Covered by Algae (%)	25.0	27.5	30.3	33.3	36.6	40.3

a) By what percent are the algae growing every week?

$$y = a * b^x$$

$$a = 25$$

$$b = 1.10$$

$$y = a \cdot b^x$$

$$y = 25(1.10)^x$$

$$0.10 = 10\%$$

$$\times 100$$

b) Assuming the same growth rate, how many weeks will it take for the algae to cover 80% of the pond?

$$y_1 = 25(1.10)^x$$

$$y_2 = 80$$

Intersection: x = 12 weeks