

Aim: How do we use Logarithms for Exponential Models? (Section Concept Byte 7-5)

Do now: Transform the following exponential function into a linear function by taking the logarithm of each side.

$$y = ab^x$$

1 – Determine whether an exponential function is a good model

1-

x	0	2	4	6	8	10
y	0.5	2	7.8	32	127.9	511.7

2- Use the calculator to enter the above table

L1	L2
0	.5
2	2
4	7.8
6	32
8	127.9
10	511.7

3- Use List 3 (L3) to enter the log of L2

L3	3
-.301	
.30103	
.89209	
1.5051	
2.1069	
2.709	

4 – The points $(x, \log y)$ lie on a line, so an exponential model is appropriate.

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5 – The above conclusion is useful when a polynomial equation can also fit the points (try a cubic function).

6- Now we are sure it is an exponential function. Find its equation by regression.

II- Exercises

For each set of values, determine whether an exponential function is a good model. If so, find the exponential function.

1.

x	1	3	5	7	9
y	6	22	54	102	145

2.

x	-1	0	1	2	3
y	40.2	19.8	9.9	5.1	2.5

3. **Writing** Explain how you could determine whether a logarithmic function is a good model for a set of data.