

Name:

Period:

Linear and Exponential Functions

6H-2

Ready, Set, Go!

Ready



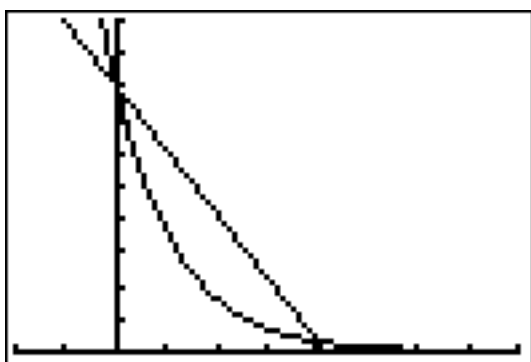
Topic: Finding an appropriate viewing window.

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When viewing the secant line of an exponential function on a calculator, you want a window that shows the two points on the curve that are being connected. Since exponential functions get very large or small in just a few steps, you may want to change the scale as well as the dimensions of the window. Don't be afraid to experiment until you are satisfied with what you see.

The graphs below depict an exponential function and a secant line. The equations are given. Identify the dimensions of the viewing window. Include the scale for both the x and y values. Check your answer by matching your calculator screen to the one displayed here.

1. $Y_1 = 4(0.2)^x$ and $Y_2 = -1.92x + 4$



WINDOW

X min = _____

X max = _____

X scl = _____

Y min = _____

Y max = _____

Y scl = _____

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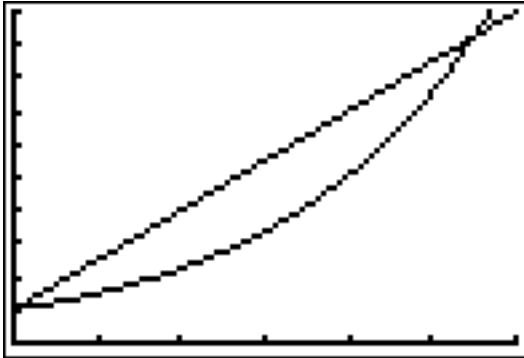
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2. $Y_1 = 1.5^x$ and $Y_2 = 1.5x + 1$



WINDOW

X min = _____

X max = _____

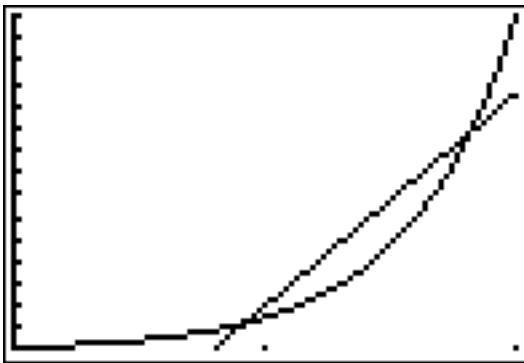
X scl = _____

Y min = _____

Y max = _____

Y scl = _____

3. $Y_1 = 150(10)^x$ and $Y_2 = 9500x - 7500$



WINDOW

X min = _____

X max = _____

X scl = _____

Y min = _____

Y max = _____

Y scl = _____

Set Topic: Using slope to compare change in linear and exponential models.

The tables below show the values for a linear model and an exponential model. Use the slope formula between each set of 2 points to calculate the rate of change.

4a. Linear model

x	y
1	30
2	630
3	1230
4	1830
5	2430

Example: Find the slope between the points (30, 1) and (630, 2) then between the points (630, 2) and (1230, 3).

Do the same between each pair of points in the table for the exponential model.

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4b. Exponential model

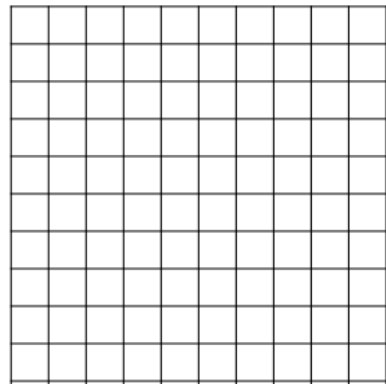
x	y
1	30
2	90
3	270
4	810
5	2430

5. Compare the change between each pair of points in the linear model to the change between each pair of points in the exponential model. Describe your observations and conclusions.

6. Find the average of the 4 rates of change of the exponential model. How does the average of the rates of change of the exponential model compare to the rates of change of the linear model?

7. Without using a graphing calculator, make a rough sketch on the same set of axes of what you think the linear model and the exponential model would look like.

8. How did your observations in #5 influence your sketch?



9. Explain how a table of 5 consecutive values can begin and end with the same y -values and be so different in the middle 3 values. How does this idea connect to the meaning of a secant line?



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Go

Topic: Developing proficiency on a calculator by using the slope formula

Use your calculator and the slope formula to find the slope of the line that passes through the 2 points.

10. A (-10, 17) B (10, 97)

11. P (57, 5287) Q (170, 4948)

12. R (6.055, 23.1825) S (5.275, 12.0675)

13. G (0.0012, 0.125) H (2.5012, 6.375)

Need Assistance? Check out these additional resources:

Slope formula
$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Selecting a viewing window.

<http://www.online.math.uh.edu/GraphCalc/Graping-and-Windows-Examples/Graping-and-Windows-Examples.htm>

