12-1 Regression Equations (Curves of Best Fit)
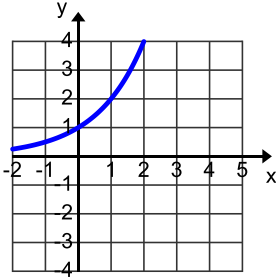
Name: _____   Time› Start: _____   Finish: _____   Total Time = _____

Open Desmos and click the + button in the top left and select to enter a table. After entering the table, look at the graph and decide what type of graph it appears to be. Use this cheat sheet to below to help you decide and then give the Regression Equation that best fits the line.
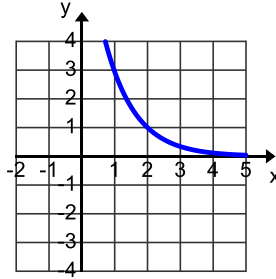
Exponential Growth

$y_1 \sim a \cdot b^{x_1}$

Exponential Decay

$y_1 \sim a \cdot b^{x_1}$

Logarithmic

$y_1 \sim a \cdot \log(x_1)$

1. _____

x	y
1	6
2	18
3	54
4	162
5	486

2. _____

x	y
1	0
2	0.602
3	0.9542
4	1.204
5	1.398
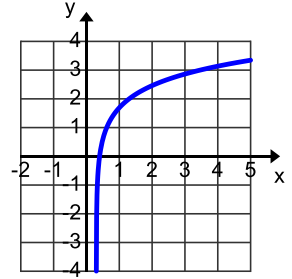
3. _____

x	y
1	0.8
2	0.64
3	0.512
4	0.4096
5	0.3277

4. _____

x	y
1	2
2	1.44
3	0.95
4	0.65
5	0.44

5. _____

x	y
1	0
2	0.46
3	0.74
4	0.92
5	1.1

6. _____

x	y
1	3.9
2	5.9
3	8.8
4	13
5	19.5

(OVER)

_____7.   Mr. Hickam loves his Latte, Flat White, or Cappuccino in the morning. To make any of them, he first makes a double shot of espresso. Sadly, on this morning, he made his espresso, but then had to take his dog Ruby outside. In that time, his espresso got cold. Here is the chart for the temperature for each minute he was outside. If the espresso continues to decrease in temperature at this rate, what will the temperature be at 10 minutes?

Espresso Cooling Down	
Time (minutes)	Temperature (^{o}F)
0	150
1	141
2	132
3	124
4	117

_____8.   Though Mr. Hickam loves NYC, it has a rat problem. Let's pretend that Mr. Hickam won the lottery and bought an abandoned building in NYC with plans to turn it into a new home; however, he couldn't do that for 1 year. His buddy, Will, went and noticed there were a few rats in this abandoned space. Will started counting up and recording how many rats were in there each month. Here is Will's chart. If the rats continue breeding at this rate, how many will there be in this building when Mr. Hickam finally starts to turn it into a new home in 12 months?

Rats in my soon to be Home	
Month	Number of Rats
0	8
1	14
2	26
3	47
4	83