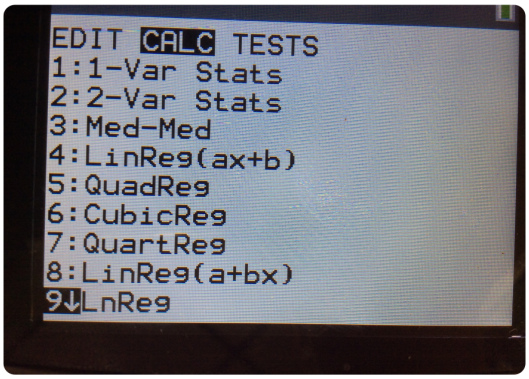
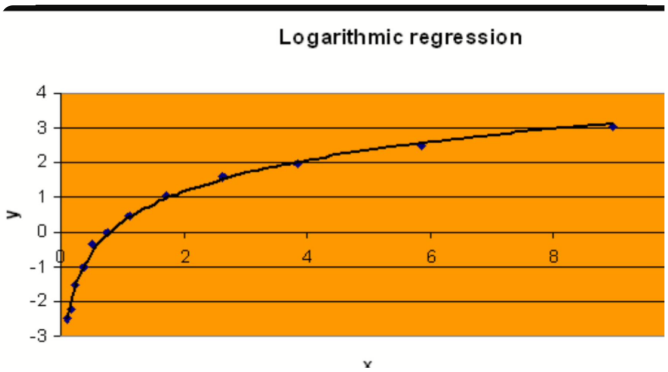
Logarithmic Regression = _____





Express the equation in exponential form.

1. $\log_5 25 = 2$

2. $\log_8 2 = 1/3$

Solve for x. Round to three decimals if necessary:

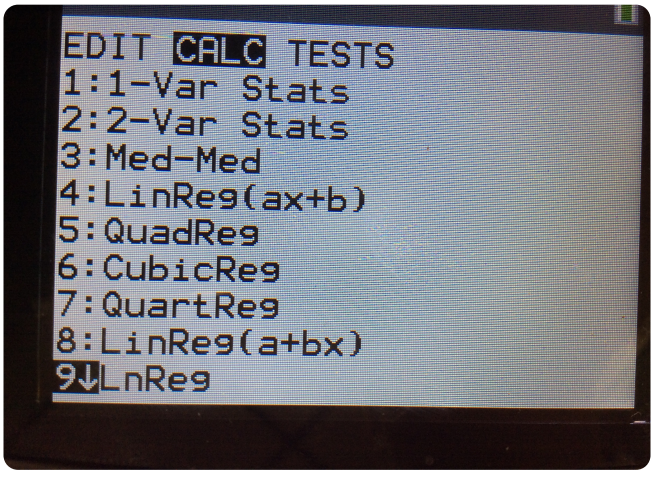
5. $\log_x 36 = 2$

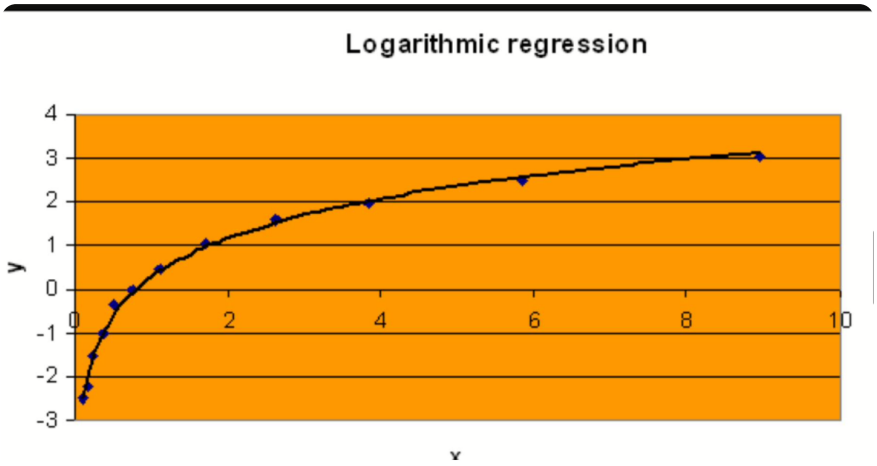
6. $\log_9 x = -3$

3. A hi-fi store kept track of the number of advertisements it placed in local newspapers and the number of stereo systems it sold each week.

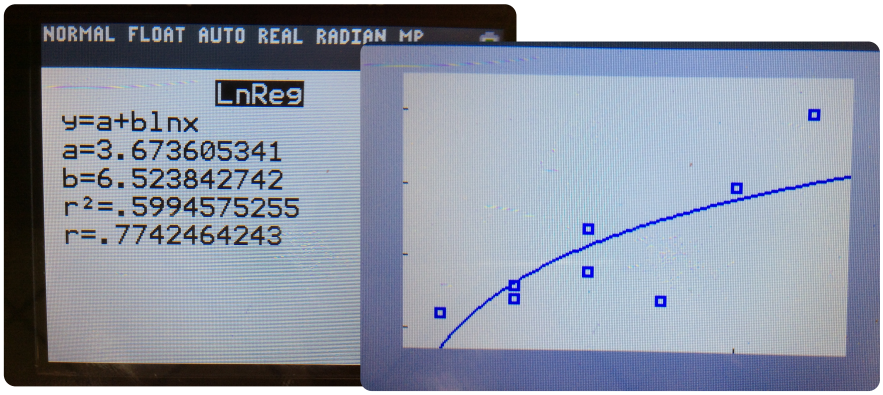
Week	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Advertisements, *x*	6	5	3	2	1	4	3	2
Stereos Sold, *y*	20	15	12	8	6	7	9	7

Logarithmic Regression = _____





What is it?


NORMAL FLOAT AUTO REAL RADIAN MP
LnReg
y=a+blnx
a=3.673605341
b=6.523842742
r²=.5994575255
r=.7742464243

4. A manufacturer of flexible seals for industrial equipment tests samples of its seals at a variety of temperatures and collects the following data.

Temperature (ºC)	16	5	9	12	7	10
Seal Failures	3	12	8	6	4	7

a) Draw a scatter plot for these data.

Perform regression analysis on the data to determine best fit for all the data points. Determine the correlation coefficient for this data.

f) Using the model of best fit, predict the number of seal failures in the temperature is 23 C.
g) Using the model of best fit, predict the temperature if the number of seal failures is 5.

Find the best equation to model the data.

Linear Correlation Coefficient:_____

Cubic Regression = _____

Quadratic Correlation Coefficient:_____

Exponential Regression = _____

Logarithmic Regression = _____

Best Fit:_____

5. The coach of the Statsville football team wants to determine if there is a relationship between how fast players can run 60 m and how far they can throw the football. The results for the Statsville players were as follows.

Player	**Sprint Time (s)**	**Throwing Distance (m)**
Jon H.	7.92	32
Tom M.	8.66	29
Sarjay P.	6.58	35
Brandon F.	8.90	32
Tyler C.	7.12	34
Steve K.	8.76	29
Matt H.	7.55	40
Robin L.	7.37	33
Alex H.	7.96	30
Mike N.	8.45	31
Ankit K.	7.75	26
Scott R.	8.05	32

a) Using technology, create a scatter plot of sprint times versus throwing distances.
b) Perform regression analysis of the data to find the line of best fit and the correlation coefficient.
c) Describe the relationship between these sprint times and throwing distances.

f) What might the coach conclude from this analysis? What limits the predictions he could make?
g) Use the regression equation to estimate the throwing distance for a player whose sprint time is 6.50 s.

a.) Find the best equation to model the data.

Linear Correlation Coefficient:_____ Cubic Regression = _____

Quadratic Correlation Coefficient:_____ Exponential Regression = _____

Logarithmic Regression = _____

Best Fit:_____

---

6. A biologist records the following data on the growth of a cell culture:

Time (hours)	0	1.00	2.00	3.00	4.00	5.00	6.00
Cell Count	100	202	387	8.10×10^2	1.59×10^3	3.11×10^3	6.32×10^3

a) Draw a scatter plot for these data.
b) Try regression models for the data, and record the regression equation and coefficient of determination for each model.
c) Which model is better? Explain why.
d) Predict the size of the cell culture at 8.5 h.
e) Estimate the time at which the number of cells will reach 100 000.

a.) Find the best equation to model the data.

Linear Correlation Coefficient:_____ Cubic Regression = _____

Quadratic Correlation Coefficient:_____ Exponential Regression = _____

Logarithmic Regression = _____

Best Fit:_____

7. A car safety association conducted tests to measure the stopping distances of a new model of car and collected the following measurements.

Speed (km/h)	30	40	50	60	70	80	90	100
Stopping Distance (m)	19.2	22.2	24.8	27.1	29.5	31.6	33.2	35.0

a) Make a scatter plot of these data.

b) Use regression to find the model of best fit and the correlation coefficient. How well does the model fit the data?

d) Which of these models is better? Explain your reasoning.

e) Using the model of best fit, estimate the speed if the stopping distance is 26 feet

f) Using the model of best fit, estimate the stopping distance if the car is traveling 120 mph.

a.) Find the best equation to model the data.

Linear Correlation Coefficient:_____

Cubic Regression = _____

Quadratic Correlation Coefficient:_____

Exponential Regression = _____

Logarithmic Regression = _____

Best Fit:_____