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Notes

Polynomial Models in the Real World

Best Fit → an equation best fits the data if it has the highest % of points that match up exactly with the data values. That equation has the strongest correlation to that data given.

R^2 → tells how closely correlated the equation is to the data entered. If R^2 is 1, then the equation is an exact match with the data entered.

Finding a the best fit polynomial function for a set of points using your calculator.



You can use calculator to enter data and find equation that BESTS fits the data.

Step 1: Diagnostics must be turned on so that all needed data is displayed. Press **2nd CATALOG** to display the catalog. Scroll to **DiagnosticOn** and press **ENTER**. Then press **ENTER** again. The calculator should display the word **Done**.

Step 2: Press **STAT** and then press **ENTER** to select **1:Edit**. In the **L1** column, enter the x-values by typing each value followed by **ENTER**. Use the right arrow key to move to the **L2** column. **ENTER** the y-values.

Step 3: Press **STAT** and use the right arrow key to show the **CALC** menu.

Select 5: QuadReg, 6:CubicReg, or 7:QuartReg

Step 4: You know which equation BEST fits the data, because it will have the R^2 value closest to 1.

If there is already data in your L1 list, highlight the heading L1, Press CLEAR, then Press ENTER to delete it.

1. $(-4, -47)$, $(-1, 7)$, and $(1, 3)$

2. $(-5, 6)$, $(-4, 3)$, $(0, 2)$, $(2, 4)$ and $(5, 10)$

3. $(-4, -3)$, $(-1, 12)$, $(0, 5)$ and $(1, 2)$

Find a polynomial function that best models the data set and answer the following questions.

4. Let x = the month number.

Month (2014)	Mill. of Barrels
2	19.782
4	19.768
6	19.553
8	19.465

a. polynomial function of best fit

b. Sketch Graph

c. How many barrels of oil were used in October of 2014 based on your function?

5. Let x = the number of years since 1950.

Year	Production (metric tons)
1955	6323
1955	9967
1960	7505
1965	8007

a. polynomial function of best fit

b. Sketch Graph

c. How much world silver was produced in 2014 based on your function?

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Notes (continued)

Polynomial Models in the Real World

4. Let x = the number of years since 2000

MCHS Students taking Stats

Year	# Students
2000	50
2004	65
2008	94
2010	110

a. polynomial function of best fit

b. Sketch Graph

c. How many students are expected to take STATS in 2015 based on your function?

5. Let x = the number of years since 1950.

% US Labor Force in Unions

Year	% laborers in Union
1955	33.2
1965	28.4
1975	25.5
1985	18.0
1995	14.9
2005	12.5

a. polynomial function of best fit

b. Sketch Graph

c. What % of the laborers are expected to be in a union in 2020 based on your function?