

How can I perform curve fitting in Google Sheets?

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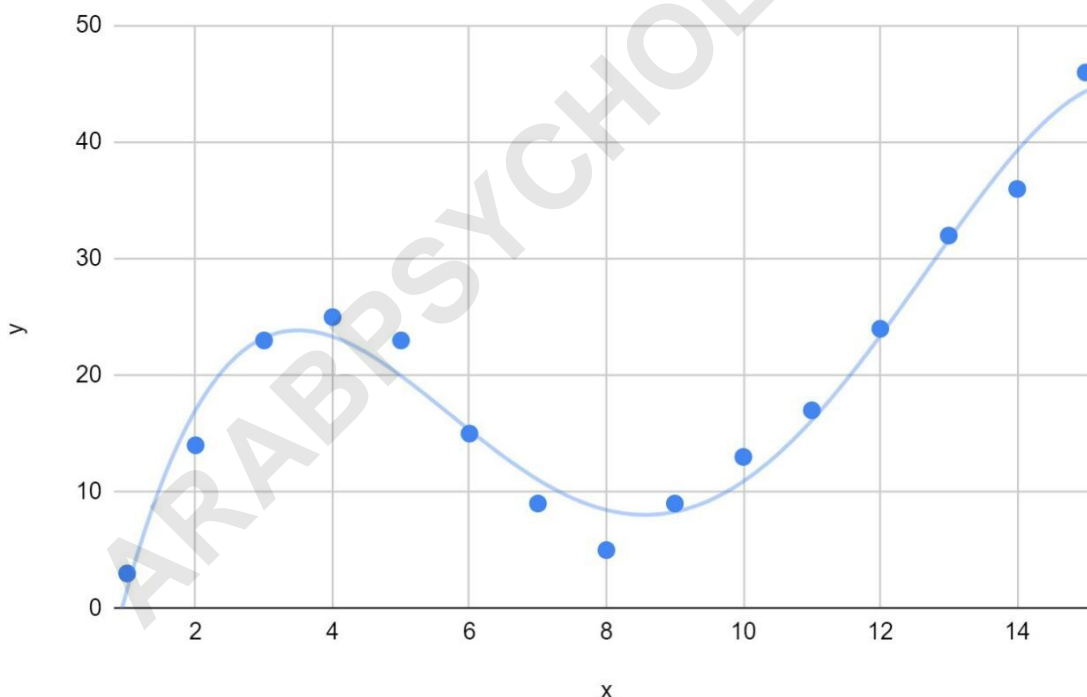
RECOMMENDED CITATION

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Curve fitting in Google Sheets is a process that involves finding the best-fit line or curve for a set of data points. This is useful for analyzing trends and making predictions based on the data. To perform curve fitting in Google Sheets, one can use the built-in "Trendline" feature, which allows users to add a trendline to a graph and customize it to fit the data. This can be done by selecting the data points, clicking on the "Insert" tab, and choosing "Trendline." From there, users can choose the type of trendline, such as linear or exponential, and adjust the settings to achieve the best fit for their data. This feature is a useful tool for data analysis and can help users make informed decisions based on their data.

Curve Fitting in Google Sheets (With Examples)

Often you may want to find the equation that best fits some curve for a dataset in Google Sheets.



Fortunately this is fairly easy to do using the Trendline function in Google Sheets.

This tutorial provides a step-by-step example of how to fit an equation to a curve in Google Sheets.

Step 1: Create the Data

First, let's create a fake dataset to work with:

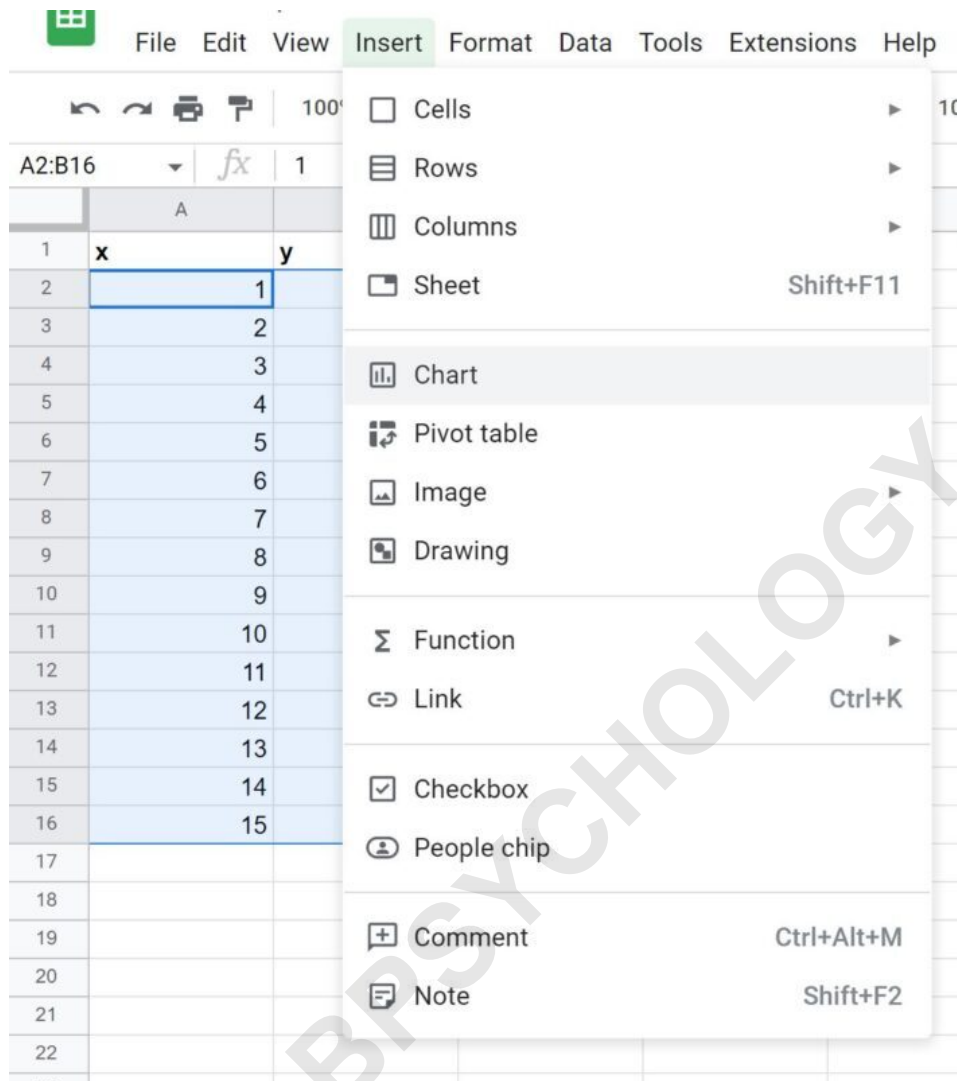
	A	B	C	D
1	x	y		
2		1	3	
3		2	14	
4		3	23	
5		4	25	
6		5	23	
7		6	15	
8		7	9	
9		8	5	
10		9	9	
11		10	13	
12		11	17	
13		12	24	
14		13	32	
15		14	36	
16		15	46	
17				
18				
19				
20				
21				

Step 2: Create a Scatterplot

Next, let's create a scatterplot to visualize the dataset.

Highlight cells A2:B16, then click the Insert tab, then

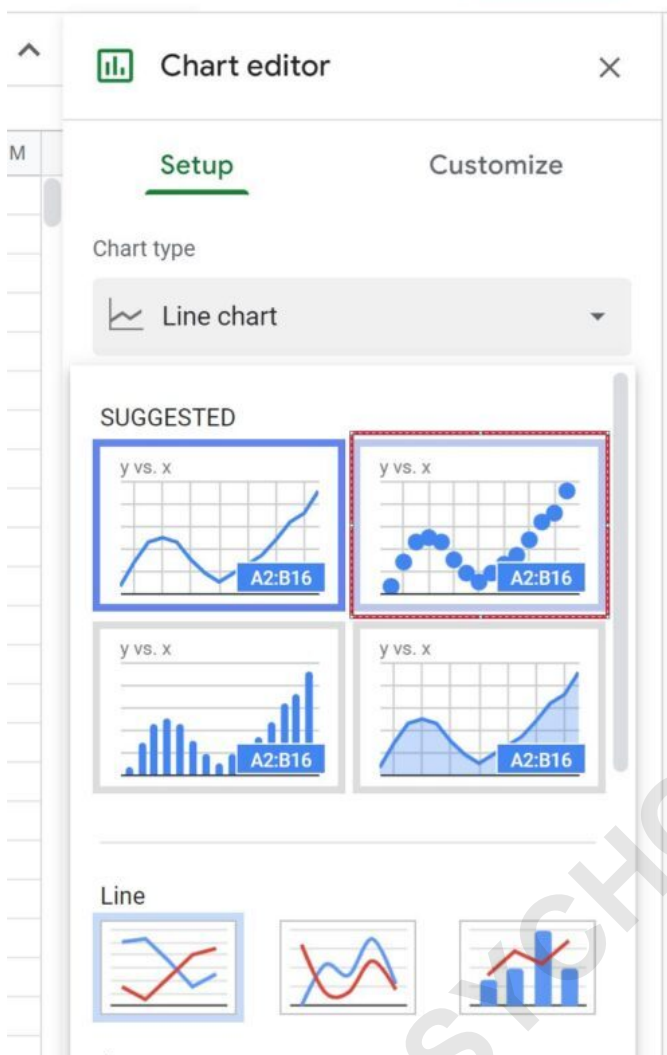
click Chart:



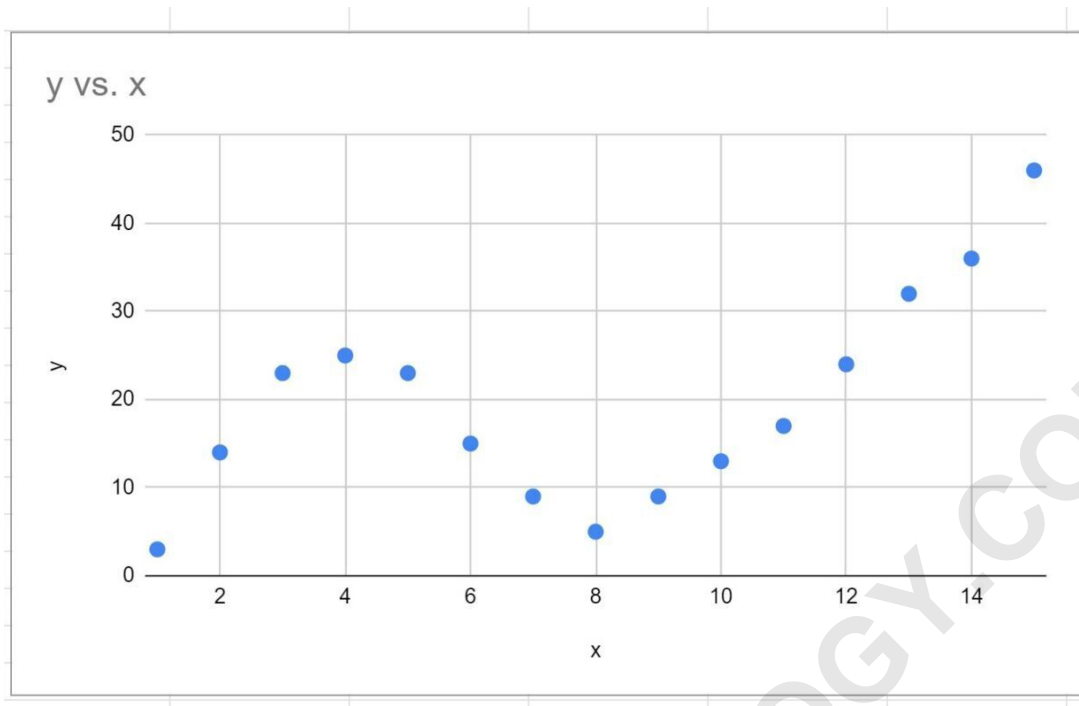
By default, Google Sheets will insert a line chart.

However, we can easily change this to a scatterplot.

In the Chart editor panel that appears on the right side of the screen, click the dropdown arrow next to Chart type and choose Scatter chart:

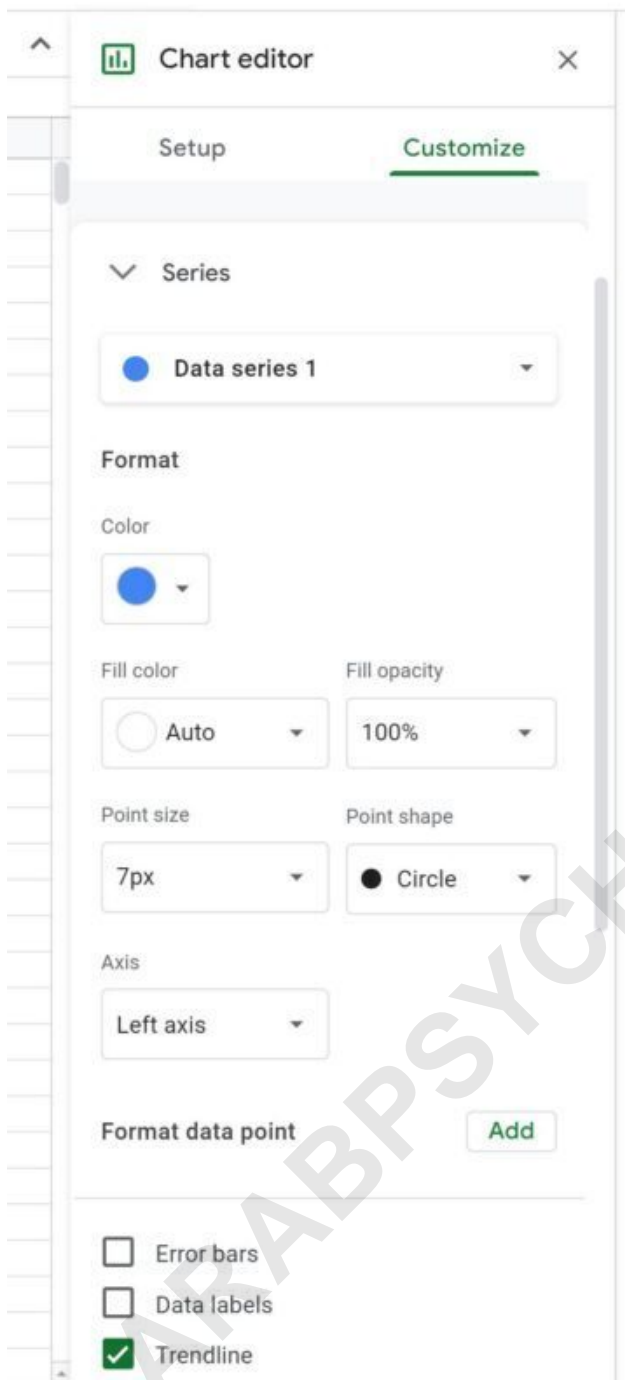


The following scatterplot will appear:



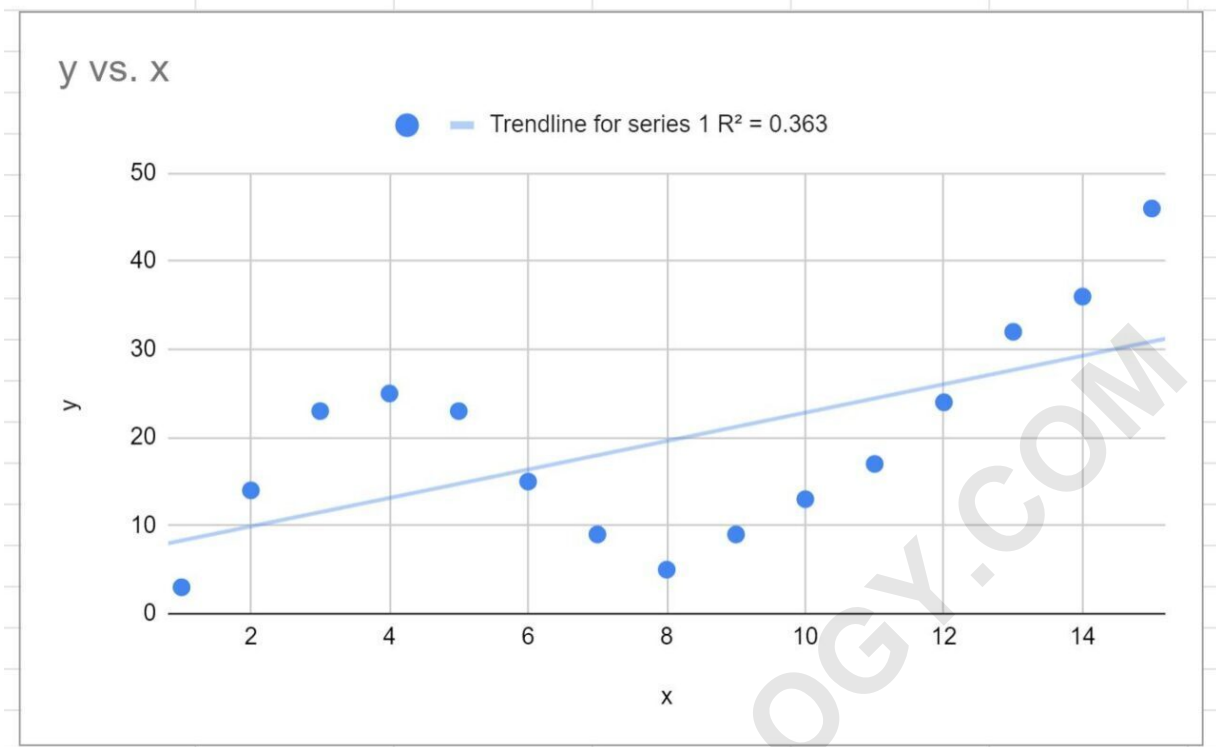
Step 3: Add a Trendline

Within the Chart editor panel, click the Customize tab. Then click the Series dropdown option. Then check the box next to Trendline.



Then check the box below it that says Show R2.

The following linear trendline will automatically be added to the plot:



The R-squared tells us the percentage of the variation in the that can be explained by the predictor variables.

The R-squared for this particular curve is 0.363.

Related:

Step 4: Choose the Best Trendline

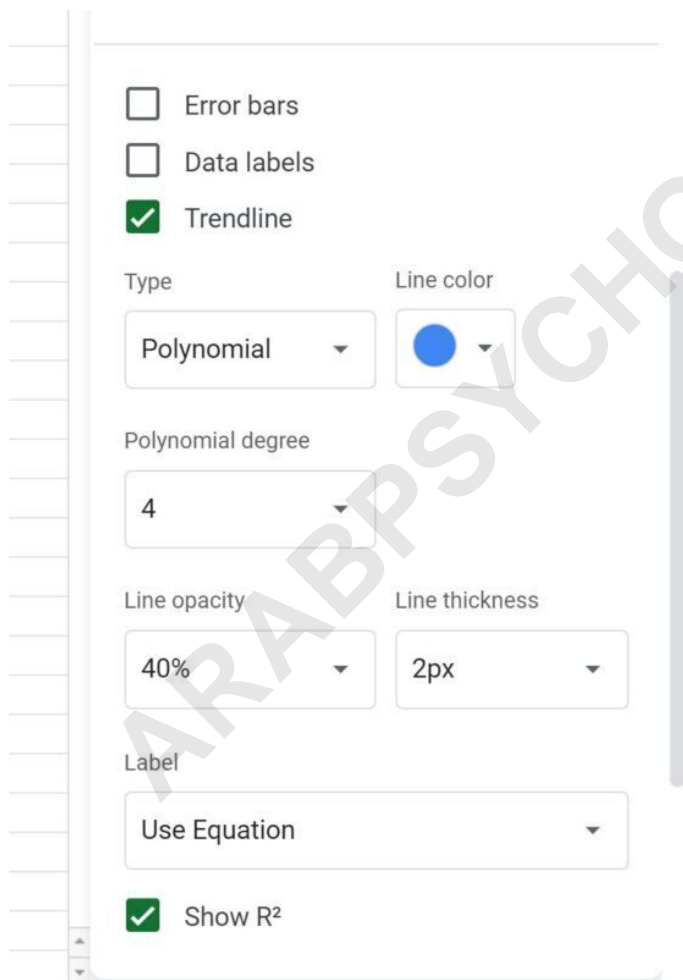
From the plot above, it's clear that the linear trendline does a poor job of capturing the behavior of the data.

Instead, we can choose to fit a polynomial curve.

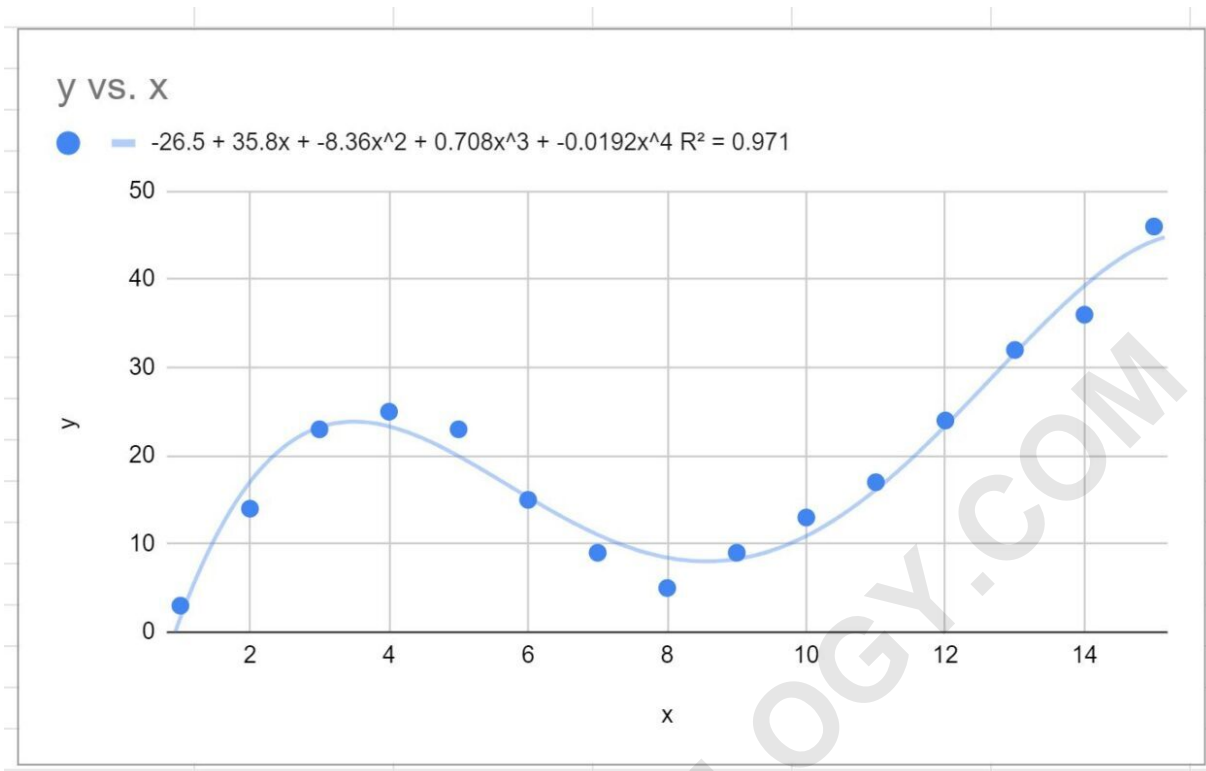
To do so, click the dropdown arrow under Type and choose Polynomial.

Then click the dropdown arrow under Polynomial degree and choose 4.

Lastly, click the dropdown arrow under Label and click Use Equation:



This results in the following curve:



The equation of the curve is as follows:

$$y = -0.0192x^4 + 0.7081x^3 - 8.3649x^2 + 35.823x - 26.516$$

The R-squared for this particular curve is 0.971.

This R-squared is considerably higher than that of the previous trendline, which indicates that it fits the dataset much more closely.

We can also use this equation of the curve to predict the value of the response variable based on the predictor variable.

For example if $x = 4$ then we would predict that $y = 23.34$:

$$y = -0.0192(4)^4 + 0.7081(4)^3 - 8.3649(4)^2 + 35.823(4) - 26.516 = 23.34$$

Note: You may have to play around with the value for the polynomial degree until you find a curve that appears to fit the data well without .

Additional Resources

The following tutorials explain how to perform other common tasks in Google Sheets: