

Linest for Polynomials

Linest is a convenient Excel function that gives slope and intercept with their standard deviations when using least-squares to fit data to a line. However it can be used for higher order polynomials as well. Since the Microsoft instructions are not easy to follow, here is a brief description.

If fitting to a line, you seek the parameters a_0 and a_1 in the function $y = a_0 + a_1x$.

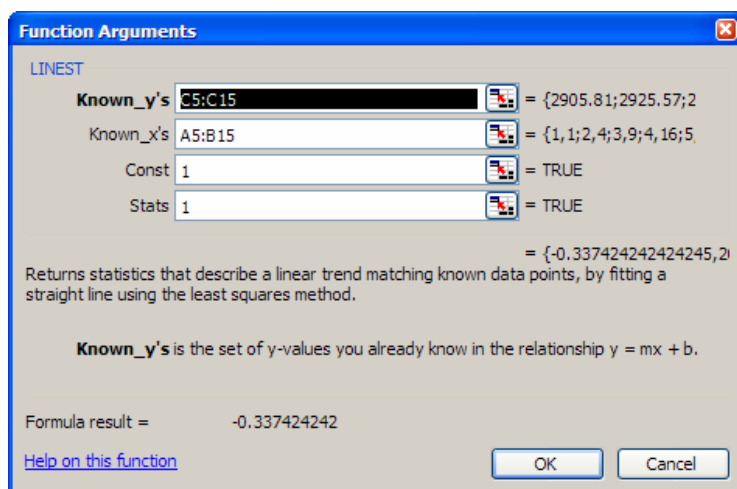
If fitting to a parabola, you want $(a_0, a_1, \text{ and } a_2)$ for the function $y = a_0 + a_1x + a_2x^2$.

First, prepare a spreadsheet with (x, y) data in columns. Insert a column for x^2 in between, and evaluate x^2 at each point. Next, prepare a four column by three row area in you spreadsheet, labeled as follows:

Linest	a2	a1	a0
value			
std. dev.			

Then execute the Linest function

- 1) highlight the 3x2 block
(empty yellow cells above)
- 2) Click on the f_x button on the toolbar
- 3) Select the function LINEST
- 4) enter the y data in “known _y’s”,
x and x^2 together in “known_x’s”,
and 1 in both Const and Stats
- 5) Do NOT press OK:
instead press Ctrl+Shift+Enter



The coefficients and standard deviations fill the highlighted block.

To check the results, plot y vs. x , and insert a trendline choosing a polynomial of order 2.

This can be extended to determine the coefficients for any function

$$y = a_0 f_0(x) + a_1 f_1(x) \dots$$

