#### LOGEST

[Syntax](Syntax.docx):

LOGEST ( known-ys [ , [ known-xs ] [ , [ const-flag ] [ , stats-flag ] ] )

Description: Calculates an exponential curve that fits the data, and returns an array of values that describes the curve.

Mathematical Formula:

The equation for the curve is:

y = b\*mx

or

y = (b\*(m1x1)\*(m2x2)\*…) (if there are multiple x-values)

where the dependent y-value is a function of the independent x-values. The m-values are bases corresponding to each exponent x-value, and [b](b.docx) is a constant value. Note that y, x, and [m](m.docx) can be vectors.

When there is only one independent x-variable, the y-intercept (b) values can be obtained directly by using the following formula:

Y-intercept (b): INDEX(LOGEST(known-ys,known-xs),2)

Arguments:

|  |  |  |
| --- | --- | --- |
| Name | Type | Description |
| known-ys | array | The set of y-values already known in the relationship y=b\*mx. If the array known-ys is a single column, then each column of known-xs is interpreted as a separate variable. If the array known-ys is a single [row](row.docx), then each [row](row.docx) of known-xs is interpreted as a separate variable. |
| known-xs | array | An optional set of x-values that might already be known in the relationship y=b\*mx. The array known-xs can include one or more [sets](sets.docx) of variables. If only one variable is used, known-ys and known-xs can be ranges of any shape, as long as they have equal dimensions. If more than one variable is used, known-ys shall be a vector (that is, a range with a height of one [row](row.docx) or a width of one column). If known-xs is omitted, it is assumed to be the array {1,2,3,...} that is the same size as known-ys. |
| const-flag | logical | Specifies whether to force the constant [b](b.docx) to be 1. If [TRUE](TRUE.docx) or omitted, [b](b.docx) is calculated normally. If [FALSE](FALSE.docx), [b](b.docx) is set to 1, and the m-values are adjusted to fit y=[m](m.docx)x. |
| stats-flag | logical | Specifies whether to return additional regression statistics. If [TRUE](TRUE.docx), LOGEST returns the additional regression statistics, so the returned array is {mn, mn-1, ..., m1, b; sen, sen-1, ..., se1, seb; r2, sey; F, df; ssreg, ssresid}. If [FALSE](FALSE.docx) or omitted, LOGEST returns only the m-coefficients and the constant b. |

The additional regression statistics are described in §.

Return Type and Value: array – The array that describes the line, in the form {mn, mn-1, ..., m1, b}. The order in which the additional regression statistics are returned is described in §.

[Example: Given the following data:

|  |  |  |
| --- | --- | --- |
|  | A | B |
| 1 | Month | Units |
| 2 | 11 | 33,100 |
| 3 | 12 | 47,300 |
| 4 | 13 | 69,000 |
| 5 | 14 | 102,000 |
| 6 | 15 | 150,000 |
| 7 | 16 | 220,000 |
| 8 | Formula |  |
| 9 | 1.463275628 | 495.3047702 |

When LOGEST(B2:B7,A2:A7,[TRUE](TRUE.docx),FALSE) is array-entered into cells A9:B9, those cells take on the results shown.  
  
end example]