

TREND

 Hide All

Returns values along a linear trend. Fits a straight line (using the method of least squares) to the arrays known_y's and known_x's. Returns the y-values along that line for the array of new_x's that you specify.

Syntax

TREND(known_y's,known_x's,new_x's,const)

Known_y's is the set of y-values you already know in the relationship $y = mx + b$.

- If the array known_y's is in a single column, then each column of known_x's is interpreted as a separate variable.
- If the array known_y's is in a single row, then each row of known_x's is interpreted as a separate variable.

Known_x's is an optional set of x-values that you may already know in the relationship $y = mx + b$.

- The array known_x's can include one or more sets of variables. If only one variable is used, known_y's and known_x's can be ranges of any shape, as long as they have equal dimensions. If more than one variable is used, known_y's must be a vector (that is, a range with a height of one row or a width of one column).
- If known_x's is omitted, it is assumed to be the array {1,2,3,...} that is the same size as known_y's.

New_x's are new x-values for which you want TREND to return corresponding y-values.

- New_x's must include a column (or row) for each independent variable, just as known_x's does. So, if known_y's is in a single column, known_x's and new_x's must have the same number of columns. If known_y's is in a single row, known_x's and new_x's must have the same number of rows.
- If you omit new_x's, it is assumed to be the same as known_x's.
- If you omit both known_x's and new_x's, they are assumed to be the array {1,2,3,...} that is the same size as known_y's.

Const is a logical value specifying whether to force the constant b to equal 0.

- If const is TRUE or omitted, b is calculated normally.
- If const is FALSE, b is set equal to 0 (zero), and the m -values are adjusted so that $y = mx$.

Remarks

- For information about how Microsoft Excel fits a line to data, see LINEST.
- You can use TREND for polynomial curve fitting by regressing against the same variable raised to different powers. For example, suppose column A contains y-values and column B contains x-values. You can enter x^2 in column C, x^3 in column D, and so on, and then regress columns B through D against column A.
- Formulas that return arrays must be entered as array formulas.
- When entering an array constant for an argument such as known_x's, use commas to separate values in the same row and semicolons to separate rows.

Example

The example may be easier to understand if you copy it to a blank worksheet.

How to copy an example

1. Create a blank workbook or worksheet.
2. Select the example in the Help topic.

NOTE Do not select the row or column headers.



Selecting an example from Help

3. Press CTRL+C.
4. In the worksheet, select cell A1, and press CTRL+V.
5. To switch between viewing the results and viewing the formulas that return the results, press CTRL+` (grave accent), or on the **Formulas** tab, in the **Formula Auditing** group, click the **Show Formulas** button.

The first formula shows corresponding values to the known values. The second formula predicts the next months values, if the linear trend continues.

	A	B	C
1	Month	Cost	Formula (Corresponding Cost)
2	1	\$133,890	=TREND(B2:B13,A2:A13)
3	2	\$135,000	

4	3	\$135,790
5	4	\$137,300
6	5	\$138,130
7	6	\$139,100
8	7	\$139,900
9	8	\$141,120
10	9	\$141,890
11	10	\$143,230
12	11	\$144,000
13	12	\$145,290

Month	Formula (Predicted Cost)
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13	=TREND(B2:B13,A2:A13,A15:A19)
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NOTE The formula in the example must be entered as an array formula. After copying the example to a blank worksheet, select the range C2:C13 or B15:B19 starting with the formula cell. Press F2, and then press CTRL+SHIFT+ENTER. If the formula is not entered as an array formula, the single results are 133953.3333 and 146171.5152.

See Also

- [GROWTH](#)
- [LINEST](#)
- [LOGEST](#)
- [Statistical functions](#)