How can I use the SLOPE function in Excel?

Authored by

stats writer

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The SLOPE function in Excel is a powerful tool that allows users to calculate the slope of a linear regression line between two sets of data points. This function can be used to determine the direction and steepness of a trend in the data, and can be particularly useful in analyzing relationships between variables. To use the SLOPE function, simply input the range of data points for the x and y variables, and the function will automatically calculate the slope value. This feature is beneficial for performing various data analysis tasks, such as forecasting and trend analysis. By utilizing the SLOPE function, users can efficiently analyze data and make informed decisions based on the results.

This article describes the formula syntax and usage of the **SLOPE** function in Microsoft Excel.

Description

Returns the slope of the linear regression line through data points in known_y's and known_x's. The slope is the vertical distance divided by the horizontal distance between any two points on the line, which is the rate of change along the regression line.

Syntax

SLOPE(known_y's, known_x's)

The SLOPE function syntax has the following arguments:

Known_y's Required. An array or cell range of numeric dependent data points.

Known_x's Required. The set of independent data points.

Remarks

The arguments must be either numbers or names, arrays, or references that contain numbers.

If an array or reference argument contains text, logical values, or empty cells, those values are ignored; however, cells with the value zero are included.

If known_y's and known_x's are empty or have a different number of data points, SLOPE returns the #N/A error value.

The equation for the slope of the regression line is:

$$b = \frac{\sum (x - \bar{x})(y - \bar{y})}{\sum (x - \bar{x})^2}$$

where x and y are the sample means AVERAGE(known_x's) and AVERAGE(known_y's).

The underlying algorithm used in the SLOPE and INTERCEPT functions is different than the underlying algorithm used in the LINEST function. The difference between these algorithms can lead to different results when data is undetermined and collinear. For example, if the data points of the known_y's argument are 0 and the data points of the known_x's argument are 1:

SLOPE and INTERCEPT return a #DIV/0! error. The SLOPE and INTERCEPT algorithm is designed to look for one and only one answer, and in this case there can be more than one answer.

LINEST returns a value of 0. The LINEST algorithm is designed to return reasonable results for collinear data, and in this case at least one answer can be found.