

# How can logarithms be calculated in VBA, and what are some examples of their use?

Authored by  
**stats writer**

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Logarithms are mathematical functions that are used to calculate the power to which a base number must be raised to produce a given number. In VBA (Visual Basic for Applications), logarithms can be calculated using the built-in function "Log". This function takes two arguments - the number whose logarithm is to be calculated and the base of the logarithm. For example, the formula "`=Log(100,10)`" will return the value 2, as 10 to the power of 2 is equal to 100.

The "Log" function can be used in various applications, such as finance, statistics, and engineering. In finance, logarithms are used to calculate compound interest and determine the growth rate of investments. In statistics, they are used to transform data that is not normally distributed into a form that can be analyzed using traditional statistical methods. In engineering, logarithms are used to calculate decibels and to model complex systems with non-linear relationships.

Overall, using logarithms in VBA can greatly enhance the accuracy and efficiency of calculations in various fields, making it an essential tool for any programmer or analyst.

## Calculate Logarithms in VBA (With Examples)

You can use the following syntax to calculate the log (base 10) of a value using VBA:

```
Function FindLog(number)FindLog =  
Application.WorksheetFunction.Log(number)End  
Function
```

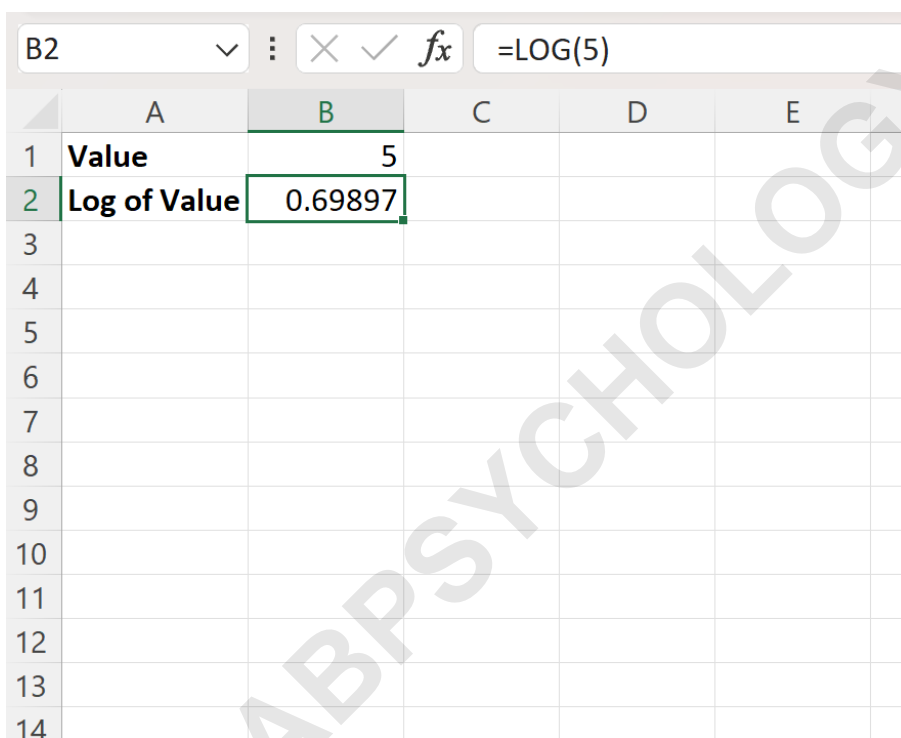
And you can use the following syntax to calculate the natural log of a value using VBA:

```
Function FindNaturalLog(number)FindNaturalLog =  
Log(number)End Function
```

The following examples show how to use each function in practice.

### Example 1: Calculate Log (Base 10) Using VBA

To calculate the log (base 10) of a value in Excel, we would use the LOG function as follows:



|    | A            | B       | C | D | E |
|----|--------------|---------|---|---|---|
| 1  | Value        | 5       |   |   |   |
| 2  | Log of Value | 0.69897 |   |   |   |
| 3  |              |         |   |   |   |
| 4  |              |         |   |   |   |
| 5  |              |         |   |   |   |
| 6  |              |         |   |   |   |
| 7  |              |         |   |   |   |
| 8  |              |         |   |   |   |
| 9  |              |         |   |   |   |
| 10 |              |         |   |   |   |
| 11 |              |         |   |   |   |
| 12 |              |         |   |   |   |
| 13 |              |         |   |   |   |
| 14 |              |         |   |   |   |

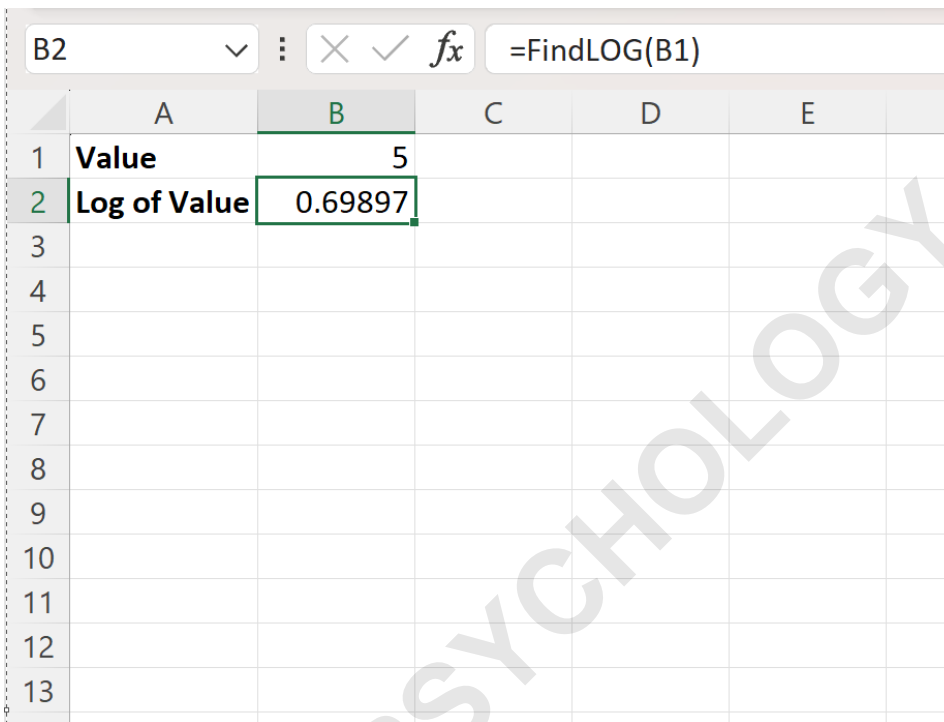
This tells us that the log of 5 is 0.69879.

To replicate this functionality in VBA, we can define the following function:

```
Function FindLog(number)FindLog = Application.WorksheetFunction.Log(number)End
```

## Function

We can then type this function into cell B2 to calculate the log of the value in cell B1:



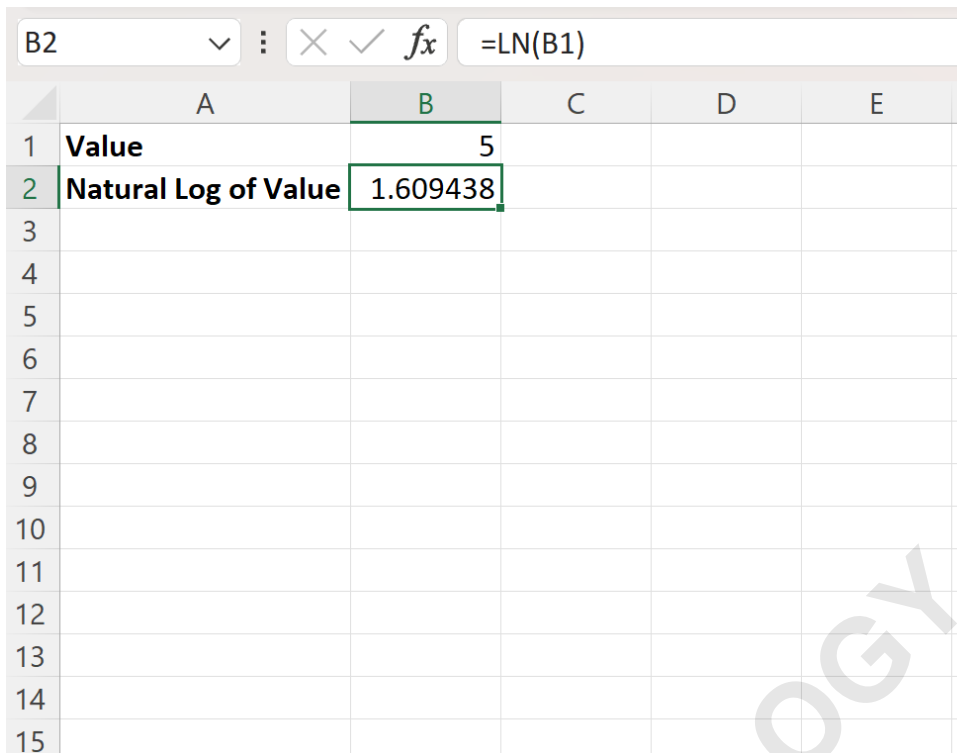
|    | A            | B       | C | D | E |
|----|--------------|---------|---|---|---|
| 1  | Value        | 5       |   |   |   |
| 2  | Log of Value | 0.69897 |   |   |   |
| 3  |              |         |   |   |   |
| 4  |              |         |   |   |   |
| 5  |              |         |   |   |   |
| 6  |              |         |   |   |   |
| 7  |              |         |   |   |   |
| 8  |              |         |   |   |   |
| 9  |              |         |   |   |   |
| 10 |              |         |   |   |   |
| 11 |              |         |   |   |   |
| 12 |              |         |   |   |   |
| 13 |              |         |   |   |   |

This tells us that the log of 5 is 0.69879.

This matches the value calculated by the LOG function in Excel.

### Example 2: Calculate Natural Log Using VBA

To calculate the natural log of a value in Excel, we would use the LN function as follows:



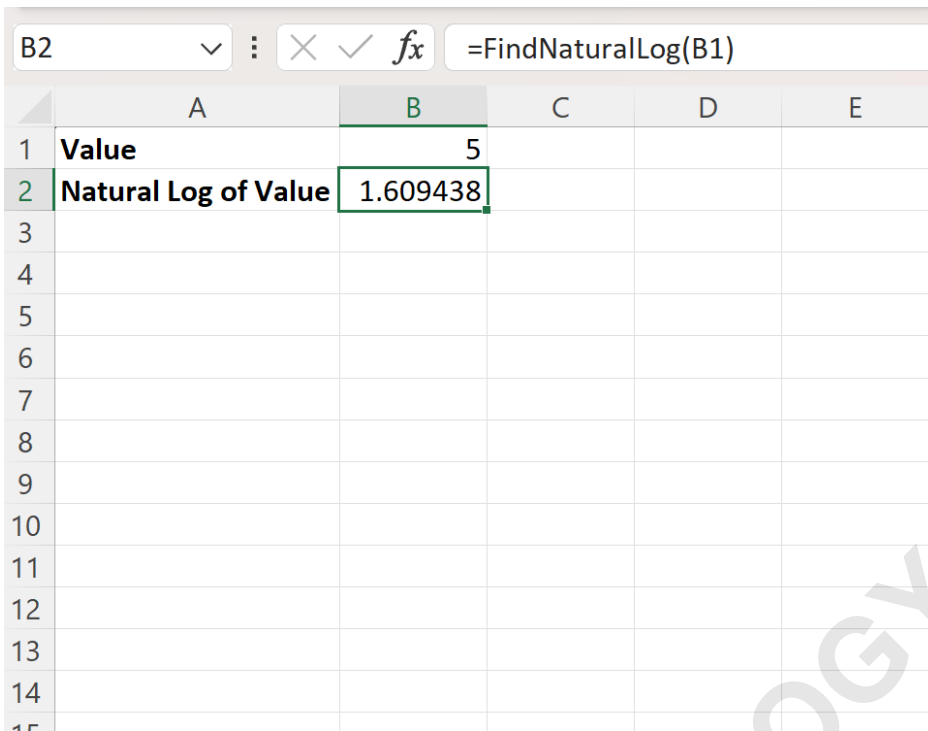
|    | A                    | B        | C | D | E |
|----|----------------------|----------|---|---|---|
| 1  | Value                | 5        |   |   |   |
| 2  | Natural Log of Value | 1.609438 |   |   |   |
| 3  |                      |          |   |   |   |
| 4  |                      |          |   |   |   |
| 5  |                      |          |   |   |   |
| 6  |                      |          |   |   |   |
| 7  |                      |          |   |   |   |
| 8  |                      |          |   |   |   |
| 9  |                      |          |   |   |   |
| 10 |                      |          |   |   |   |
| 11 |                      |          |   |   |   |
| 12 |                      |          |   |   |   |
| 13 |                      |          |   |   |   |
| 14 |                      |          |   |   |   |
| 15 |                      |          |   |   |   |

This tells us that the natural log of 5 is 1.609438.

To replicate this functionality in VBA, we can define the following function:

```
Function FindNaturalLog(number)FindNaturalLog =  
Log(number)End Function
```

We can then type this function into cell B2 to calculate the natural log of the value in cell B1:



The image shows an Excel spreadsheet with a formula bar at the top. The formula bar contains the text `=FindNaturalLog(B1)`. Below the formula bar, the spreadsheet grid is visible. Column A contains the text "Value" in cell A1 and "Natural Log of Value" in cell A2. Column B contains the value "5" in cell B1 and "1.609438" in cell B2. The formula bar indicates that the value in B2 is calculated by the VBA function `FindNaturalLog` applied to the value in B1.

|    | A                    | B        | C | D | E |
|----|----------------------|----------|---|---|---|
| 1  | Value                | 5        |   |   |   |
| 2  | Natural Log of Value | 1.609438 |   |   |   |
| 3  |                      |          |   |   |   |
| 4  |                      |          |   |   |   |
| 5  |                      |          |   |   |   |
| 6  |                      |          |   |   |   |
| 7  |                      |          |   |   |   |
| 8  |                      |          |   |   |   |
| 9  |                      |          |   |   |   |
| 10 |                      |          |   |   |   |
| 11 |                      |          |   |   |   |
| 12 |                      |          |   |   |   |
| 13 |                      |          |   |   |   |
| 14 |                      |          |   |   |   |
| 15 |                      |          |   |   |   |

**This tells us that the log of 5 is 1.609438.**

**This matches the value calculated by the LN function in Excel.**