

POW Function

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Computes the value of the first argument raised to the value of the second argument.

Each argument can be a Decimal or Integer literal or a reference to a column containing numeric values.

Wrangle vs. SQL: This function is part of Wrangle , a proprietary data transformation language. Wrangle is not SQL. For more information, see *Wrangle Language*.

Basic Usage

Numeric literal example:

```
pow(10,3)
```

Output: Returns the value of 10^3 , which is 1000.

Column reference example:

```
pow(MyValue,2)
```

Output: Returns the value of the `MyValue` column raised to the power of 2 (squared).

Syntax and Arguments

```
pow(base_numeric_value, exp_numeric_value)
```

Argument	Required?	Data Type	Description
base_numeric_value	Y	string, decimal, or integer	Name of column or Decimal or Integer literal that is the base value to be raised to the power of the second argument
exp_numeric_value	Y	string, decimal, or integer	Name of column or Decimal or Integer literal that is the power to which to raise the base value

For more information on syntax standards, see *Language Documentation Syntax Notes*.

base_numeric_value

Name of the column or numeric literal whose values are used as the bases for the exponential computation.

- Missing input values generate missing results.

- Literal numeric values should not be quoted.
- Multiple columns and wildcards are not supported.

Usage Notes:

Required?	Data Type	Example Value
Yes	String (column reference) or Integer or Decimal literal	2 . 3

exp_numeric_value

Name of the column or numeric literal whose values are used as the power to which the base-numeric value is raised.

- Missing input values generate missing results.
- Literal numeric values should not be quoted.
- Multiple columns and wildcards are not supported.

Usage Notes:

Required?	Data Type	Example Value
Yes	String (column reference) or Integer or Decimal literal	5

Examples

Tip: For additional examples, see *Common Tasks*.

Example - Exponential functions

This example demonstrates the exponential functions.

Functions:

Item	Description
EXP Function	Computes the value of <i>e</i> raised to the specified power. The value can be a Decimal or Integer literal or a reference to a column containing numeric values.
LN Function	Computes the natural logarithm of an input value. The value can be a Decimal or Integer literal or a reference to a column containing numeric values.
LOG Function	Computes the logarithm of the first argument with a base of the second argument.
POW Function	Computes the value of the first argument raised to the value of the second argument.

Source:

rowNum	X
1	-2
2	1
3	0

4	1
5	2
6	3
7	4
8	5

Transformation:

Transformation Name	New formula
Parameter: Formula type	Single row formula
Parameter: Formula	EXP (X)
Parameter: New column name	'expX'

Transformation Name	New formula
Parameter: Formula type	Single row formula
Parameter: Formula	LN (expX)
Parameter: New column name	'ln_expX'

Transformation Name	New formula
Parameter: Formula type	Single row formula
Parameter: Formula	LOG (X)
Parameter: New column name	'logX'

Transformation Name	New formula
Parameter: Formula type	Single row formula
Parameter: Formula	POW (10,logX)
Parameter: New column name	'pow_logX'

Results:

In the following, (null value) indicates that a null value is generated for the computation.

rowNum	X	expX	ln_expX	logX	pow_logX
1	-2	0.1353352832366127	-2	(null value)	(null value)
2	-1	0.1353352832366127	-0.9999999999999998	(null value)	(null value)
3	0	1	0	(null value)	0
4	1	2.718281828459045	1	0	1

5	2	7.3890560989306495	2	0.30102999566398114	1.9999999999999998
6	3	20.085536923187668	3	0.47712125471966244	3
7	4	54.59815003314423	4	0.6020599913279623	3.9999999999999999
8	5	148.41315910257657	5	0.6989700043360187	4.9999999999999999

Example - Pythagorean Theorem

In this example, you learn how to compute exponentials and square roots on your numeric data.

Functions:

Item	Description
POW Function	Computes the value of the first argument raised to the value of the second argument.
SQRT Function	Computes the square root of the input parameter. Input value can be a Decimal or Integer literal or a reference to a column containing numeric values. All generated values are non-negative.

Source:

The dataset below contains values for x and y:

X	Y
3	4
4	9
8	10
30	40

Transformation:

You can use the following transformation to generate values for z^2 .

NOTE: Do not add this step to your recipe right now.

Transformation Name	New formula
Parameter: Formula type	Single row formula
Parameter: Formula	$(POW(x, 2) + POW(y, 2))$
Parameter: New column name	'Z'

You can see how column Z is generated as the sum of squares of the other two columns, which yields z^2 .

Now, edit the transformation to wrap the value computation in a `SQRT` function. This step is done to compute the value for z, which is the distance between the two points based on the Pythagorean theorem.

Transformation Name	New formula
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Parameter: Formula type	Single row formula
Parameter: Formula	$\text{SQRT}(\text{POW}(x,2) + \text{POW}(y,2))$
Parameter: New column name	'Z'

Results:

X	Y	Z
3	4	5
4	9	9.848857801796104
8	10	12.806248474865697
30	40	50