

# EXP Function

Computes the value of  $e$  raised to the specified power. The value can be a Decimal or Integer literal or a reference to a column containing numeric values.

- $e$  or Euler's Number is the value that the following equation approaches as  $n$  grows large:  $(1 + (1/n))^n$ .

**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:

```
exp(1)
```

**Output:** Returns the value of  $e^1$ , which is approximately 2.718281828.

### Column reference example:

```
exp(MyValue)
```

**Output:** Returns the value of  $e$  to the power of the value in the `MyValue` column.

## Syntax and Arguments

```
exp(numeric_value)
```

| Argument      | Required? | Data Type                   | Description   |
|---------------|-----------|-----------------------------|---|
| numeric_value | Y         | string, decimal, or integer | Name of column or Decimal or Integer literal to apply to the function |

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

### numeric\_value

Name of the column or numeric literal whose value is the exponent of  $e$ .

- Missing input values generate missing results.
- Literal numeric values should not be quoted. Quoted values are treated as strings.
- 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         |

## Examples

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

### Example - Exponential functions

The following example demonstrates how the exponential functions work together. These functions include the following:

- EXP -  $e^X$ . See *EXP Function*.
- LN - natural logarithm of the above. See *LN Function*.
- LOG -  $10^X$ . See *LOG Function*.
- POW -  $X^Y$ . The value X raised to the power Y. See *POW Function*.

#### Source:

| rowNum | X  |
|--------|----|
| 1      | -2 |
| 2      | 1  |
| 3      | 0  |
| 4      | 1  |
| 5      | 2  |
| 6      | 3  |
| 7      | 4  |
| 8      | 5  |

#### Transformation:

|                                   |                    |
|-----------------------------------|--------------------|
| <b>Transformation Name</b>        | New formula        |
| <b>Parameter: Formula type</b>    | Single row formula |
| <b>Parameter: Formula</b>         | EXP (X)            |
| <b>Parameter: New column name</b> | 'expX'             |

|                                   |                    |
|-----------------------------------|--------------------|
| <b>Transformation Name</b>        | New formula        |
| <b>Parameter: Formula type</b>    | Single row formula |
| <b>Parameter: Formula</b>         | LN (expX)          |
| <b>Parameter: New column name</b> | 'ln_expX'          |

|                                |                    |
|--------------------------------|--------------------|
| <b>Transformation Name</b>     | New formula        |
| <b>Parameter: Formula type</b> | Single row formula |

|                                   |         |
|-----------------------------------|---------|
| <b>Parameter: Formula</b>         | LOG (X) |
| <b>Parameter: New column name</b> | 'logX'  |

|                                   |                    |
|-----------------------------------|--------------------|
| <b>Transformation Name</b>        | New formula        |
| <b>Parameter: Formula type</b>    | Single row formula |
| <b>Parameter: Formula</b>         | POW (10,logX)      |
| <b>Parameter: New column name</b> | '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 |