

# 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:  $(1 + (1/n))^n$ .

## Basic Usage

### Numeric literal example:

```
derive type:single value: EXP(1)
```

**Output:** Generates a column containing the value of  $e^1$ , which is approximately 2.718281828.

### Column reference example:

```
derive type:single value: EXP(MyValue) as: 'exp_MyValue'
```

**Output:** Generates the new `exp_MyInteger` column containing the value of  $e$  to the power of the value in the `MyValue` column.

## Syntax and Arguments

```
derive type:single value: 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  |

### Transform:

```
derive type:single value: EXP (X) as: 'expX'
```

```
derive type:single value: LN (expX) as: 'ln_expX'
```

```
derive type:single value: LOG (X) as: 'logX'
```

```
derive type:single value: POW (10,logX) as: '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  | 3.999999999999999  |
| 8      | 5  | 148.41315910257657 | 5                   | 0.6989700043360187  | 4.999999999999999  |

