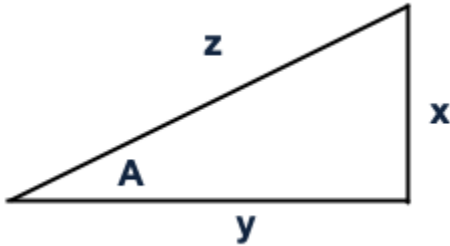


COS Function

Computes the cosine of an input value for an angle measured in radians. The value can be a Decimal or Integer literal or a reference to a column containing numeric values.



In the above, the cosine of angle A is computed as the following:

$$\cos(A) = y/z$$

The secant of angle A is $1/\cos(A)$, or:

$$\sec(A) = 1/\cos(A) = z/y$$

You can convert from degrees to radians. For more information, see *RADIANS Function*.

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:

```
round(cos(radians(30)), 3)
```

Output: Returns the computation of the cosine of a 30-degree angle, which is converted to radians before being passed to the COS function. The output value is rounded to three decimals: 0.866.

Column reference example:

```
cos(X)
```

Output: Returns the cosine of the radians values in X column.

Syntax and Arguments

```
cos(numeric_value)
```

| Argument | Required? | Data Type | Description |
|----------|-----------|-----------|-------------|
|----------|-----------|-----------|-------------|

| | | | |
|---------------|---|-----------------------------|--|
| numeric_value | Y | string, decimal, or integer | Name of column, Decimal or Integer literal, or function returning those types to apply to the function |
|---------------|---|-----------------------------|--|

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

numeric_value

Name of the column, Integer or Decimal literal, or function returning that data type to apply to the function.

- 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 | 0 . 5 |

Examples

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

Example - Trigonometry functions

This example illustrates how to apply basic trigonometric functions to your transformations. All of the functions take inputs in radians.

- **Sine.** See *SIN Function*.
- **Cosine.** See *COS Function*.
- **Tangent.** See *TAN Function*.
- **Cotangent.** Computed as $1/\text{TAN}$.
- **Secant.** Computed as $1/\text{COS}$.
- **Cosecant.** Computed as $1/\text{SIN}$.

Source:

In the following sample, input values are in degrees:

| X |
|-----|
| -30 |
| 0 |
| 30 |
| 45 |
| 60 |
| 90 |
| 120 |
| 135 |
| 180 |

Transformation:

In this example, all values are rounded to three decimals for clarity.

First, the above values in degrees must be converted to radians.

| | |
|-----------------------------------|-----------------------------------|
| Transformation Name | New formula |
| Parameter: Formula type | Single row formula |
| Parameter: Formula | <code>round(radians(X), 3)</code> |
| Parameter: New column name | 'rX' |

Sine:

| | |
|-----------------------------------|--------------------------------|
| Transformation Name | New formula |
| Parameter: Formula type | Single row formula |
| Parameter: Formula | <code>round(sin(rX), 3)</code> |
| Parameter: New column name | 'SINrX' |

Cosine:

| | |
|-----------------------------------|--------------------------------|
| Transformation Name | New formula |
| Parameter: Formula type | Single row formula |
| Parameter: Formula | <code>round(cos(rX), 3)</code> |
| Parameter: New column name | 'COSrX' |

Tangent:

| | |
|-----------------------------------|--------------------------------|
| Transformation Name | New formula |
| Parameter: Formula type | Single row formula |
| Parameter: Formula | <code>round(tan(rX), 3)</code> |
| Parameter: New column name | 'TANrX' |

Cotangent:

| | |
|-----------------------------------|------------------------------------|
| Transformation Name | New formula |
| Parameter: Formula type | Single row formula |
| Parameter: Formula | <code>round(1 / tan(rX), 3)</code> |
| Parameter: New column name | 'COTrX' |

Secant:

| | |
|-----------------------------------|------------------------------------|
| Transformation Name | New formula |
| Parameter: Formula type | Single row formula |
| Parameter: Formula | <code>round(1 / cos(rX), 3)</code> |
| Parameter: New column name | 'SECrX' |

Cosecant:

| | |
|-----------------------------------|------------------------------------|
| Transformation Name | New formula |
| Parameter: Formula type | Single row formula |
| Parameter: Formula | <code>round(1 / sin(rX), 3)</code> |
| Parameter: New column name | 'CSCrX' |

Results:

| X | rX | COTrX | SECrX | CSCrX | TANrX | COSrX | SINrX |
|-----|--------|-------------|-----------|-------------|-----------|--------|-------|
| -30 | -0.524 | -1.73 | 1.155 | -1.999 | -0.578 | 0.866 | -0.5 |
| 0 | 0 | <i>null</i> | 1 | <i>null</i> | 0 | 1 | 0 |
| 30 | 0.524 | 1.73 | 1.155 | 1.999 | 0.578 | 0.866 | 0.5 |
| 45 | 0.785 | 1.001 | 1.414 | 1.415 | 0.999 | 0.707 | 0.707 |
| 60 | 1.047 | 0.578 | 1.999 | 1.155 | 1.731 | 0.5 | 0.866 |
| 90 | 1.571 | 0 | -4909.826 | 1 | -4909.826 | 0 | 1 |
| 120 | 2.094 | -0.577 | -2.001 | 1.154 | -1.734 | -0.5 | 0.866 |
| 135 | 2.356 | -1 | -1.414 | 1.414 | -1 | -0.707 | 0.707 |
| 180 | 3.142 | 2454.913 | -1 | -2454.913 | 0 | -1 | 0 |