

EXAMPLE - Trigonometry Functions

This example illustrates how to apply basic trigonometric functions to your transformations.

Functions:

Item	Description
SIN Function	Computes the sine 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.
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.
TAN Function	Computes the tangent 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.

The following functions are computed using the above functions:

- **Cotangent.** Computed as $1/\text{TAN}$.
- **Secant.** Computed as $1/\text{COS}$.
- **Cosecant.** Computed as $1/\text{SIN}$.

Also:

Item	Description
ROUND Function	Rounds input value to the nearest integer. Input can be an Integer, a Decimal, a column reference, or an expression. Optional second argument can be used to specify the number of digits to which to round.
RADIANS Function	Computes the radians of an input value measuring degrees of an angle. The value can be a Decimal or Integer literal or a reference to a column containing numeric values.

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'
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Cosecant:

Transformation Name	New formula
Parameter: Formula type	Single row formula
Parameter: Formula	round(1 / sin(rX), 3)
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