**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.

**Basic Usage**

**Numeric literal example:**

```
derive type:single value:SQRT(25 )
```

**Output:** Generates a column containing the square root of 25, which is 5.

**Column reference example:**

```
derive type:single value:SQRT(MyValue) as: 'sqroot_MyValue'
```

**Output:** Generates the new `sqroot_MyValue` column containing the square root of the values of the `MyValue` column.

**Syntax**

```
derive type:single value:SQRT(numeric_value)
```

<table>
<thead>
<tr>
<th>Argument</th>
<th>Required?</th>
<th>Data Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>numeric_value</td>
<td>Y</td>
<td>string, decimal, or integer</td>
<td>Name of column or Decimal or Integer literal to apply to the function</td>
</tr>
</tbody>
</table>

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

**numeric_value**

Name of the column or numeric literal whose values are used to compute the square root.

**NOTE:** Negative input values generate null output values.

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

**Usage Notes:**

<table>
<thead>
<tr>
<th>Required?</th>
<th>Data Type</th>
<th>Example Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>String (column reference) or Integer or Decimal literal</td>
<td>2.5</td>
</tr>
</tbody>
</table>

**Examples**
Example - Pythagorean Theorem

The following example demonstrates how the \texttt{POW} and \texttt{SQRT} functions work together to compute the hypotenuse of a right triangle using the Pythagorean theorem.

- \texttt{POW - X^Y}. In this case, 10 to the power of the previous one. See \textit{POW Function}.
- \texttt{SQRT} - computes the square root of the input value. See \textit{SQRT Function}.

The Pythagorean theorem states that in a right triangle the length of each side \((x,y)\) and of the hypotenuse \((z)\) can be represented as the following:

\[ z^2 = x^2 + y^2 \]

Therefore, the length of \(z\) can be expressed as the following:

\[ z = \sqrt{x^2 + y^2} \]

Source:

The dataset below contains values for \(x\) and \(y\):

<table>
<thead>
<tr>
<th>X</th>
<th>Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>30</td>
<td>40</td>
</tr>
</tbody>
</table>

Transform:

You can use the following transform to generate values for \(z^2\).

\[
\text{derive type:single value:}(\text{POW}(x,2) + \text{POW}(y,2)) \text{ as:'Z'}
\]

You can see how column \(Z\) is generated as the sum of squares of the other two columns. Now, wrap the value computation in a \texttt{SQRT} function:

\[
\text{derive type:single value:}\sqrt{(\text{POW}(x,2) + \text{POW}(y,2))} \text{ as: 'Z'
}\]

Results:

<table>
<thead>
<tr>
<th>X</th>
<th>Y</th>
<th>Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>9</td>
<td>9.848857801796104</td>
</tr>
<tr>
<td>8</td>
<td>10</td>
<td>12.806248474865697</td>
</tr>
<tr>
<td>30</td>
<td>40</td>
<td>50</td>
</tr>
</tbody>
</table>

\textit{NOTE:} Do not add this step to your recipe right now.