

# EXAMPLE - RANDBETWEEN and PI Functions

This example illustrates how you can apply functions to generate random numeric data in your dataset.

## Functions:

Item	Description
RANDBETWEEN Function	Generates a random integer between a low and a high number. Two inputs may be Integer or Decimal types, functions returning these types, or column references.
PI Function	The PI function generates the value of pi to 15 decimal places: 3.1415926535897932.
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.
TRUNC Function	Removes all digits to the right of the decimal point for any value. Optionally, you can specify the number of digits to which to round. Input can be an Integer, a Decimal, a column reference, or an expression.
POW Function	Computes the value of the first argument raised to the value of the second argument.

## Source:

In the following example, a company produces 10 circular parts, the size of which is measured in each product's radius in inches.

prodId	radius_in
p001	1
p002	2
p003	3
p004	4
p005	5
p006	6
p007	7
p008	8
p009	9
p010	10

Based on the above data, the company wants to generate some additional sizing information for these circular parts, including the generation of two points along each part's circumference where quality stress tests can be applied.

## Transformation:

To begin, you can use the following steps to generate the area and circumference for each product, rounded to three decimal points:

<b>Transformation Name</b>	New formula
<b>Parameter: Formula type</b>	Single row formula
<b>Parameter: Formula</b>	<code>ROUND(PI() * (POW(radius_in, 2)), 3)</code>
<b>Parameter: New column name</b>	'area_sqin'

<b>Transformation Name</b>	New formula
<b>Parameter: Formula type</b>	Single row formula
<b>Parameter: Formula</b>	ROUND(PI() * (2 * radius_in), 3)
<b>Parameter: New column name</b>	'circumference_in'

For quality purposes, the company needs two tests points along the circumference, which are generated by calculating two separate random locations along the circumference. Since the RANDBETWEEN function only calculates using Integer values, you must first truncate the values from `circumference_in`:

<b>Transformation Name</b>	New formula
<b>Parameter: Formula type</b>	Single row formula
<b>Parameter: Formula</b>	TRUNC(circumference_in)
<b>Parameter: New column name</b>	'trunc_circumference_in'

Then, you can calculate the random points using the following:

<b>Transformation Name</b>	New formula
<b>Parameter: Formula type</b>	Single row formula
<b>Parameter: Formula</b>	RANDBETWEEN(0, trunc_circumference_in)
<b>Parameter: New column name</b>	'testPt01_in'

<b>Transformation Name</b>	New formula
<b>Parameter: Formula type</b>	Single row formula
<b>Parameter: Formula</b>	RANDBETWEEN(0, trunc_circumference_in)
<b>Parameter: New column name</b>	'testPt02_in'

## Results:

After the `trunc_circumference_in` column is dropped, the data should look similar to the following:

prodlid	radius_in	area_sq_in	circumference_in	testPt01_in	testPt02_in
p001	1	3.142	6.283	5	5
p002	2	12.566	12.566	3	3
p003	3	28.274	18.850	13	13
p004	4	50.265	25.133	24	24
p005	5	78.540	31.416	0	0
p006	6	113.097	37.699	15	15
p007	7	153.938	43.982	11	11
p008	8	201.062	50.265	1	1

p009	9	254.469	56.549	29	29
p010	10	314.159	62.832	21	21