

Osc1

A periodic function oscillating between two values. By using this function you can model various periodic variables. The input value to this function is typically a time variable. Assume e.g., that you are modeling an industrial system. The system is periodically inspected and various preventive maintenance operations are carried out. If a system failure occurs during an inspection, the error is immediately repaired at a relatively small cost. On the other hand, if a system failure occurs between two inspections, the cost of repairing the system is typically much higher. Such a situation can easily be modeled using the Osc1 function. Let the input value to the Osc1 function be the point of time when the first system failure occurs. Furthermore, let the parameters of the function be defined as follows:

“a” = The cost of repairing a system failure between inspections.

“b” = The cost of repairing a system failure during inspections.

“c” = The point of time when the system enters its first operative phase.

“d” = The length of the interval between two inspections.

“e” = The length of an inspection period.

The output value of the function is then the cost of the first system repair.

Default parameter values:

$a = 1, b = 0, c = 0, d = 1, e = 1$

Example:

$a = 6, b = 2, c = 0, d = 10, e = 1$

Input = 8.5 => Output =
6

Input = 10.5 => Output =
2