

## Osc2

A periodic function changing gradually from one value to another in each period. 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 system is shut down until the next inspection. The cost of shutting down the system is proportional to the length of the period from the system failure time to the next inspection. Such a situation can easily be modeled using the Osc2 function. Let the input value to the Osc2 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 if the failure occurs at the start of an operative phase, including a possible shut down cost.

“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, including a possible shut down cost.

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 =  
2.6

Input = 10.5 => Output =  
2