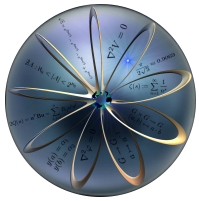

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factorial

Canonical name	Factorial
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Related topic	ExponentialFactorial

For any non-negative integer n, the *factorial* of n, denoted $n!$, can be defined by

$$n! = \prod_{r=1}^{n} r$$

where for $n = 0$ the empty product is taken to be 1.

Alternatively, the factorial can be defined recursively by $0! = 1$ and $n! = n(n-1)!$ for $n > 0$.

$n!$ is equal to the number of permutations of n distinct objects. For example, there are 5! ways to arrange the five letters A, B, C, D and E into a word.

For every non-negative integer n we have

$$\Gamma(n+1) = n!$$

where Γ is Euler's gamma function. In this way the notion of factorial can be generalized to all `http://planetmath.org/Complex`complex values except the negative integers.