k-Factorial

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Arizona State Univ., Special Collections
1972

Let n and k be positive integers, with 1 =< k =< n-1.

As a generalization of the factorial and double factorial one defines the k-factorial of n as the below product of all possible strictly positive factors:

SKF(n) = n(n-k)(n-2k)… .

Particular Cases:

S1F(n) is just the well-known factorial of n, i.e. n! = n(n-1)(n-2)…1.

S2F(n) is just the well-known double factorial of n, i.e. n!! = n(n-2)(n-4)… .

S3F(n) is the triple factorial of n, i.e. n!!! = n(n-3)(n-6)… .

S4F(n) is the fourth factorial of n, i.e. S4F(n) = n(n-4)(n-8)… .

Examples:

S3F(7) = 7(7-3)(7-6) = 28.

S4F(8) = 8(8-4)=32.

S10F(27) = 27(27-10)(27-20) = 27(17)7 = 3213.

Remark:

Many Smarandache type functions, such as the Smarandache (classical) function, double factorial function, ceil functions, etc. can be extended/transformed to this k-factorial definition.