

NumTh	Number theory functions					
g-shift						
f-shift	M.FACT	ϕ_E				
unshifted	FACTORS	σ_0	σ_1	σ_k	σ_1^*	σ_k^*
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Level	Label	Type	FullName	Extended description	Category	Flag	Catalog	Default
Menu p1	NumTh	MENU	Number theory functions	Number theory functions -- see https://en.wikipedia.org/wiki/Divisor_function	Mathematics		NumTh	
F1	FACTORS	Function (monadic)	Prime factors	Prime factors of the integer input in X ; factors are calculated in Long integer, stored as Real number (34 digits) and returned as a 2 row matrix (row 1 contains the primes, row 2 contains the powers) ; shows status, number being tested and last factor found ; interrupt by [EXIT] ; registers G, H, K are used to store the last three factors, in Long integer (register K stores the remaining number to be factorised after interrupt) -- see https://en.wikipedia.org/wiki/Pollard's_rho_algorithm ; https://en.wikipedia.org/wiki/Shanks%27s_square_forms_factorization ; Info : Pollard's rho algorithm and Shanks's square forms factorization are used ; prime factors will be accurate up to 3 317 044 064 679 887 385 961 980 ; for input values > 34 digits, the long integer factors are saved in DATA/<YYYYMMDD-HHMMSS00>.REGS.TSV ; during execution, status info may be shown: Factors: Small prime trial: p = Factors: Perfect Sq trial: p = Factors: Shanks/Pollard: n = Factors: Shanks/Pollard: n =	Integers		FACTORS	
F2	σ_0	Function (monadic)	Divisor count function (k = 0)	Divisor count function (k = 0) using either a FACTORS matrix or Long integer as input in X	Mathematics		σ_0	
F3	σ_1	Function (monadic)	Sigma function (k = 1)	Sigma function (k = 1) using either a FACTORS matrix or Long integer as input in X	Mathematics		σ_1	
F4	σ_k	Function (dyadic)	Generalised sigma function	Generalised sigma function using either a FACTORS matrix or Long integer as input in X	Mathematics		σ_k	
F5	σ_1^*	Function (monadic)	Proper sigma function	Proper sigma function using either a FACTORS matrix or Long integer as input in X	Mathematics		σ_1^*	
F6	σ_k^*	Function (dyadic)	Generalised proper sigma function	Generalised proper sigma function using either a FACTORS matrix or Long integer as input in X	Mathematics		σ_k^*	
fF1	M.FACT	Function (monadic)	Multiply (prime) factors	Multiply (prime) factors from a 2 row matrix in X (row 1 contains the factors, row 2 contains the powers) ; Info : E.g. use FACTORS matrix as input in X	Integers		M.FACT	
fF2	ϕ_E	Function (monadic)	Euler's totient function	Euler's totient function using either a FACTORS matrix or Long integer as input in X -- see https://en.wikipedia.org/wiki/Euler's_totient_function	Mathematics		ϕ_E	
fF3								
fF4								
fF5								
fF6								
gF1								
gF2								
gF3								
gF4								
gF5								
gF6								