Powersum, version 1.0, 2023-09-01

Rolf Pütter

Let n and k be integers, consider n to be fixed and k variable. Then the sum of the first k n-th powers of integers may be expressed as a polynomial of degree n+1 in k,

, for example .

is alway 0 because, for k=0, the sum is 0.

The program POWERSUM outputs the coefficients ar, r=1,…,n+1, as a list (in fact the list is stored in L2).

The ar are the solution of a simple system of linear equations (already in triangular form), stored in matrix [A]. So you can reproduce the result with rref([A]).

Copy the file powersum.8xp to your TI-84 Plus, unarchive it and enter pgrmPOWERSUM on the home screen. You will be prompted for n; the output will be the list of the ar, starting with a1.