

Program installation

The file SESELIMARA is an HP49G directory which contains all the programs described below. On the HP49G go to the directory under which you want the new directory to reside. Transfer the file SESELIMARA from your Mac/PC to the HP49G using XMODEM. This will create a new directory named SESELIMARA on the HP49G, which will reside under the current directory.

A brief description of the programs

Program	Description
TERMS	Takes an algebraic object and returns a list of its terms. Example: $(A+B) \cdot C$ $\{A \cdot C \ B \cdot C\}$
ACC	Finds the greatest possible accuracy on the HP49G for a given real number.
BOUNDS	Takes a sequence and returns a list of its bounds.
CONDENSPT	Takes a sequence and returns its condensation points.
CONTOURPLOT	Draws curves of contours of functions $Z = F(X,Y)$.
CONVERGES?	Takes a sequence and returns a 1 if it converges, or a 0 if it doesn't.
GRAPH	Takes a function, a point and a small positive ϵ and visualises the concepts of \lim , (ϵ, δ) for the given arguments.
rN	Uses the user created function USDEFSEQ to return an algebraic object that represents the N^{th} difference at point n of some the sequence defined by USDEFSEQ. (S UD has to be run prior to rN.) Takes a real number and returns the smallest positive real that added to the input returns a number different than the input.
EVACOMP	Takes an inequality and an interval of values for some variable contained in the inequality. It finds out if the inequality is satisfied in this interval.
FDISTR	Takes a sum of many terms and splits it in sums of each of the terms. Example: $\sum_{n=0}^+ a_n + b_n$ will be split to $\sum_{n=0}^+ a_n + \sum_{n=0}^+ b_n$.
GENFUNC	Takes a series and returns its generating function, or errors out if it can't deal with the recurrence.

HASCNDSPT?	Takes a sequence and returns a 1 if it has condensations points, or 0 if it doesn't.
INTERCONT?	Takes a function and an interval and finds if the function is continuous in this interval.
ISCONT?	Takes a function and a point and finds out if the function is continuous at this point.
ISINF?	Takes a sequence and returns a 1 if it is infinite, or 0 if it is finite.
LIM	Enhances the built-in lim function for piece wise defined functions at the points of discontinuities.
N SEQ	Takes a sequence, the order N of the difference , and the point n where the difference has to be found and returns the N th difference at this point.
ORDARSEQ	Takes a sequence and if the sequence is a higher order arithmetic sequence, then it returns its order.
PARTSUMSEQ	Takes a series and returns a its partial sum sequence.
PRE	Finds the greatest possible precision on the HP49G for a given real number.
RCASSM	Takes a name and returns the assumptions for that name, or an empty list in case no assumptions are made for that name.
RCR ANL	Takes a series and returns its analytic closed form or errors out if it can't deal with the recurrence.
S UD	Takes a sequence and stores a user defined function named USDEFSEQ for that sequence.
ABSCONVERGES?	Takes a series and returns a 1 if it converges absolutely. Other wise it returns a 0.
CONVERGES?	Takes a series and returns 1 if it converges, or 0 if it doesn't. The limit of the series is returned on stack level 2 if possible.
SEQMONTY	Takes a sequence and returns its monotony behaviour.

Behaviour	Result
Monotonic increasing	2
Non decreasing for sure and perhaps monotonic increasing	:?:1
Non decreasing	1

Constant	0
Non increasing	-1
Non increasing for sure and perhaps monotonic decreasing	:?:-1
Monotonic decreasing	-2
Nothing of the above	3
Can't determine monotony behaviour	?

SEQTYPE

Takes a series and returns its type on stack level 1 and a list on stack level 2.

If the series is analytic, the program returns it unchanged on stack level 2 and put a 1 on stack level 1.

If it is a recurrence of the form $\{P(n) = P(m) + P(l) \mid \{P(0) = a \mid P(1) = b\}\}$, where $m, l < n$, the program puts a 2 on stack level 1 and returns a list on stack level 2 which contains the terms of the series, their factors, the initial conditions, and the index variable.

If it is a recurrence of the form $\{P(n) = P(n-1) + f(n) \mid \{P(0) = a\}\}$, the program puts a 3 on stack level 1 and returns a list on stack level 2 that contains the terms of the recurrence, their factors (or the term itself in case it is not of the form $P(\&N)$), the initial conditions, the index variable and a list that indicates which of the summands are of the form $P(\&N)$.

SOLARSEQ

Solves arithmetic sequences.

SOLGESEQ

Solves geometric sequences.

SPCASES

Takes a sequence and returns a list of sequences that represent all possible outcomes of the original sequence in case it contains expressions like 1^n , $(-1)^n$ or periodic functions with n in their argument.

TRANSER

Takes a sum which contains expressions like 1^n , $(-1)^n$ or periodic functions with n in their argument. It transforms the sum to another sum which has all possible outcomes of the special cases combined in a single summand.