SET COMPLEMENT

PURPOSE
Carry out the complement of 2 sets with numeric elements.

DESCRIPTION
The complement is of set 1 with respect to set 2 (the assumed superset). The resultant set is those elements in set 2 which are not in set 1. For example, the complement of the 3-element set 1 5 7 with respect to the 5-element set 1 3 5 7 9 is the 2-element set 3 9.

SYNTAX
LET <v3> = SET COMPLEMENT <v1> <v2> <SUBSET/EXCEPT/FOR qualification>
where <v1> is the variable containing the elements of the first set;
<v2> is the variable containing the elements of the second set;
<v3> is the variable containing the elements of the resultant set;
and where the <SUBSET/EXCEPT/FOR qualification> is optional and rarely used in this context.

EXAMPLES
LET Y3 = SET COMPLEMENT Y1 Y2
LET Y3 = SET COMPLEMENT Y1 Y2 SUBSET Y1 > 10

NOTE
If the elements of a mathematical “set” are numbers (or can be translated into numbers-- always possible), then a DATAPLOT variable can be used to store the items of the mathematical set. To store the set with the 12 elements 1 3 5 7 11 1 4 9 16 1 8 27, form the variable Y with the following command:
LET Y = DATA 1 3 5 7 11 1 4 9 16 1 8 27
Larger sets can be created with the READ or SERIAL READ commands.

DEFAULT
None

SYNONYMS
None

RELATED COMMANDS
SET CARDINALITY = Computes the number of elements in a set.
SET UNION = Carries out a set union.
SET INTERSECTION = Carries out a set intersection.
SET CARTESIAN PRODUCT = Carries out a set Cartesian product.

APPLICATIONS
Mathematics

IMPLEMENTATION DATE
87/10

PROGRAM
LET Y1 = DATA 1 5 7
LET Y2 = DATA 1 3 5 7 9
LET Y3 = SET COMPLEMENT Y1 Y2
SET WRITE DECIMALS 0
WRITE Y1 Y2 Y3