**COMPLEX ADDITION**

**PURPOSE**
Carry out a complex addition (element-by-element) of 2 complex variables.

**DESCRIPTION**
DATAPLOT stores all variables as real. Complex variables are supported as a pair of real variables. That is, the pair Y1,Y2 of real variables can be thought of as the single complex variable Y1 + i*Y2 where i is the square root of -1.

Complex addition is performed by adding the two real components and adding the two complex components. That is, (a+bi) + (c+di) = (a+c) + (b+d)i.

**SYNTAX**

```
LET <v5> <v6> = COMPLEX ADDITION <v1> <v2> <v3> <v4> <SUBSET/EXCEPT/FOR qualification>
```

where <v1> and <v2> are the real and imaginary components of the first input variable;
<v3> and <v4> are the real and imaginary components of the second input variable;
<v5> and <v6> are the real and imaginary components of the output variable;
and where the <SUBSET/EXCEPT/FOR qualification> is optional and rarely used in this context.

**EXAMPLES**

```
LET Y5 Y6 = COMPLEX ADDITION Y1 Y2 Y3 Y4
LET Y3R Y3I = COMPLEX ADDITION Y1R Y1I Y2R Y2I
LET E F = COMPLEX ADDITION A B C D SUBSET A > 10
LET E F = COMPLEX ADDITION A B C D FOR I = 1 1 20
```

**DEFAULT**
None

**SYNONYMS**
None

**RELATED COMMANDS**

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**APPLICATIONS**
Mathematics

**IMPLEMENTATION DATE**
87/10

**PROGRAM**

```
READ X1 Y1 X2 Y2
1 2 3 4
3 5 2 1
2 2 4 3
END OF DATA
LET X3 Y3 = COMPLEX ADDITION X1 Y1 X2 Y2
SET WRITE DECIMALS 0
WRITE X1 Y1 X2 Y2 X3 Y3
```