ABC formula for the HP-25 model

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Contents

1 The ABC formula HP-25 code

key strokes	step	display code(s)	remark
ON			Switch the calculator ON
← PRGM			Switch the HP-25 in program mode
STO 3	01	23 3	Start. Save 'c'
R↓	02	22	
CHS	03	32	
STO 2	04	23 2	Save '-b'
R↓	05	22	
2	06	2	
×	07	61	
STO 1	08	23 1	Save '2a'
2	09	2	
×	10	61	'4a'
RCL 3	11	24 3	
×	12	61	'4ac'
RCL 2	13	24 2	
g x^2	14	15 02	'b*b'
-	15	41	
CHS	16	32	'd = b*b - 4ac'
g X<0	17	15 41	If d < 0 then NO solutions
GTO 34	18	13 34	

key strokes	step	display code(s)	remark
f $\sqrt{x}$	19	14 02	Square root of 'd'
STO 0	20	23 0	Save square root of 'd'
RCL 2	21	24 2	
+	22	51	
RCL 1	23	24 1	
÷	24	71	+ ABC formula
STO 4	25	23 4	Save x1
RCL 2	26	24 2	
RCL 0	27	24 0	
-	28	41	
RCL 1	29	24 1	
÷	30	71	- ABC formula
STO 5	31	23 5	Save x2
RCL 4	32	24 4	Read x1
GTO 00	33	13 00	Return with x1 in X and x2 in Y
0	34	0	The are no real value solutions
STO 4	35	23 4	Save 0 in x1
STO 5	36	23 5	Save 0 in x2
ENTER	37	31	
GTO 00	38	13 00	Return with 0 in X and 0 in Y, no real value solutions
→ RUN			

2 How to use the function ABC formula

A quadratic equation with real or complex coefficients has two solutions, called roots. These two solutions may or may not be distinct, and they may or may not be real. With this program only real solutions are calculated.

Having:

$$ax^2 + bx + c = 0$$

Enter the values a, b and c and execute the function by pressing the R/S key.

Example with $a = 1$, $b = -5$ and $c = 4$:

Keystrokes:

```
  1
ENTER
  5
CHS
ENTER
  4
R/S
```

running

Result: 4.0000 $x \lesseqgtr y$ 1.0000

So the solution is: $x_1 = 1$ and $x_2 = 4$