

00476C PROGRAM DESCRIPTION I

Page 1 of 6

Program Title HIGH RESOLUTION PLOT ROUTINE-- (RELATIVELY) FAST VERSION
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Program Description, Equations, Variables Lines 01 through 49 of the program request user input and initialize the variables needed by the main body of the plotting program. These lines can be used as a separate initialization program if sufficient memory space to hold the whole program is unavailable. Lines 50 to 80 compute column numbers (between 1 and 168) for each of the 7 rows of print dots in a line. Registers 00 through 06 are filled with numbers of the form $ccc.rrr$, where $rrr=2^i$, $i=0, \dots, 6$. Lines 81 to 121 Sort these 7 print numbers by column and combine the fractional parts where the column numbers are equal. Lines 122 through 145 fill up and print out the print buffer. Then 4 x-increments are added to represent the space between lines, and column numbers for the next 7 print rows are computed starting at step 50 again.

Necessary Accessories Printer plus 1 memory module. A card reader eliminates the need for the memory module if lines 01 through 48 are used as a separate initialization program. The rest of the program will run without a memory module
Operating Limits and Warnings with plenty of room (2^4 registers) to spare for $f(x)$. Just make sure that the $f(x)$ values will fall between the YMIN and YMAX supplied as input to the plot routine. A tiny bit under YMIN or over YMAX is OK.

Reference(s) January 1980 PPC Journal pages 25-26, "High Resolution Plotting" by Jake Schwartz. This new program is an improved version of Schwartz's "PLOTNR".
Execution time and register requirements have been cut by over 25 percent.

This program has been verified only with respect to the numerical example given in Program Description II. User accepts and uses this program material AT HIS OWN RISK, in reliance solely upon his own inspection of the program material and without reliance upon any representation or description concerning the program material.

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Input	Function	Display	Comments
	XEQ SIZE 015		
	XEQ DEG		set sufficient size
	XEQ "HRPLOT"	FNAME?	and proper trig mode for f(x)
ABSSIN	R/S	YMIN?	
0	R/S	YMAX?	The program controls the ALPHA shift key.
1	R/S	XMIN?	
0	R/S	XMAX?	
360	R/S	XINC?	
2	R/S		

PLOT OF ABSSIN
Y: 0.0 TO 1.0
X: 0.0 TO 360.0
STEPS OF 2.0

SIZE:
(HP-41C) ≥ 015

[illegible]

PROGRAM LISTING

□ 67 □ 97 ☒ 41C

STEP/ LINE	KEY ENTRY	KEY CODE (67/97 only)	COMMENTS	STEP/ LINE	KEY ENTRY	KEY CODE (67/97 only)	COMMENTS
01	LBL "HRP			44	-		
02	LOT			45	168		
03	AON			46	/		
04	PROMPT		Request	47	STO 13		Store delta-y
05	AOFF		input	48	FIX 0		
06	ASTO 14			49	ZREG 00		
07	"YMIN?"			50	LBL 00		
08	PROMPT			51	1 E-3		Initialize
09	STO 12			52	STO 07		for each
10	"YMAX?"			53	6		print line
11	PROMPT			54	*		
12	STO 13			55	STO 08		
13	"XMIN?"			56	CLZ		
14	PROMPT			57	CLX		
15	STO 09			58	STO 06		
16	"XMAX?"			59	LBL 01		
17	PROMPT			60	RCL 11		
18	STO 11			61	RCL 09		
19	"X INC?"			62	X>Y?		Check for final
20	PROMPT			63	SF 19		print row
21	STO 10			64	X>Y?		
22	"PLOT OF		Print header	65	GT0 02		
"				66	XEQ IND		Call f(x)
23	ARCL 14			14			
24	PRA			67	RCL 12		
25	FIX 1			68	-		
26	"Y: "			69	RCL 13		
27	ARCL 12			70	/		
28	"F TO "			71	RND		print column
29	ARCL 13			72	RCL 07		number
30	PRA			73	+		
31	"X: "			74	STO IND		store for later
32	ARCL 09			08			sorting
33	"F TO "			75	2		
34	ARCL 11			76	ST* 07		
35	PRA			77	RCL 10		
36	"STEPS 0			78	ST+ 09		
F "				79	ISG 08		
37	ARCL 10			80	GT0 01		get a new x
38	PRA			81	LBL 02		
39	"-----"			82	SF 20		
40	"F-----"			83	LBL 03		
41	PRA			84	.005		
42	RCL 13			85	STO 08		
43	RCL 12			86	LBL 04		
				87	RCL 08		
				88	1.001		
				89	+		

□ 67 □ 97 ☒ 41C

STEP/ LINE	KEY ENTRY	KEY CODE (67/97 only)	COMMENTS	STEP/ LINE	KEY ENTRY	KEY CODE (67/97 only)	COMMENTS
90	STO 07			129	GTO 14		
91	LBL 05		Sort f(x) points	130	INT		
92	FC? 20		by value, since	131	ENTER↑		
93	GTO 06		they must be	132	X<> 07		
94	RCL IND		printed by	133	-		
08			column number	134	1		
95	RCL IND			135	-		
07			Bubble sort	136	SKPCOL		
96	X<Y?		is used	137	RCL IND		
97	X<> IND			08			
08				138	FRC		
98	STO IND			139	1 E3		
07				140	*		
99	ISG 07			141	ACCOL		
100	GTO 05			142	LBL 14		
101	ISG 08			143	ISG 08		
102	GTO 04			144	GTO 09		
103	CF 20			145	PRBUF		Print full line
104	GTO 03			146	RCL 10		
105	LBL 06			147	4		
106	RCL IND		Finish setting	148	*		Add 4 x increments
08			up to print	149	ST+ 09		for space between
107	INT		value (row	150	FC?C 19		the lines
108	RCL IND		number) by	151	GTO 00		
07			column from	152	ADV		
109	INT		left to right	153	ADV		
110	X*Y?			154	ADV		advance paper
111	GTO 14			155	ADV		when done
112	LASTX			156	END		
113	FRC						
114	ST+ IND						
08							
115	CLX						
116	STO IND						
07							
117	ISG 07						
118	GTO 06						
119	LBL 14						
120	ISG 08						
121	GTO 04						
122	.006						
123	STO 08						
124	CLX						
125	STO 07						
126	LBL 09		Load one column				
127	RCL IND		at a time into				
08			the print buffer				
128	X<=0?						

ROW 1 (1 : 3)



ROW 2 (3 : 7)



ROW 3 (7 : 13)



ROW 4 (13 : 16)



ROW 5 (17 : 22)



ROW 6 (22 : 25)



ROW 7 (26 : 29)



ROW 8 (29 : 33)



ROW 9 (33 : 36)



ROW 10 (36 : 39)



ROW 11 (39 : 40)



ROW 12 (40 : 44)



ROW 13 (45 : 51)



ROW 14 (51 : 63)



ROW 15 (63 : 73)



ROW 16 (74 : 81)



ROW 17 (82 : 88)



ROW 18 (88 : 95)



ROW 19 (96 : 102)



ROW 20 (103 : 111)



ROW 21 (111 : 119)



ROW 22 (120 : 127)



ROW 23 (127 : 136)



ROW 24 (137 : 144)



ROW 25 (144 : 152)



ROW 26 (153 : 156)



ROW 1 (1 : 3)



ROW 2 (3 : 7)



ROW 3 (7 : 13)



ROW 4 (13 : 16)



ROW 5 (17 : 22)



ROW 6 (22 : 25)



ROW 7 (26 : 29)



ROW 8 (29 : 33)



ROW 9 (33 : 36)



ROW 10 (36 : 39)



ROW 11 (39 : 40)



ROW 12 (40 : 44)



ROW 13 (45 : 51)



ROW 14 (51 : 63)



ROW 15 (63 : 73)



ROW 16 (74 : 81)



ROW 17 (82 : 88)



ROW 18 (88 : 95)



ROW 19 (96 : 102)



ROW 20 (103 : 111)



ROW 21 (111 : 119)



ROW 22 (120 : 127)



ROW 23 (127 : 136)



ROW 24 (137 : 144)



ROW 25 (144 : 152)



ROW 26 (153 : 156)

