

Program Title PLOT OF 2/3 FUNCTIONS ON ONE GRAPH.

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Program Description, Equations, Variables This program enables the user to plot up to 3 functions on one axis. Prior to executing the program a routine must be entered in program mode which solves the functions to be plotted. An example is shown in Program Description II of how to enter these functions.

F(X1) must be stored in STO 05

F(X2) must be stored in STO 06

F(X3) must be stored in STO 07

For only two functions stores 05 and 06 should be used.

The X axis is stored in STO 04 automatically on entry.

Necessary Accessories 82143A Printer, 1 Memory module

Operating Limits and Warnings X INC must be a positive or negative integer.

Y MAX > F(Xn) > Y MIN

X MAX > X MIN > 0 and an Integer

Reference(s)

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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PROGRAM DESCRIPTION II

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Sample Problem (Sketch if Desired)

To plot 3 curves:

$$f(x_1) = \sin x$$

$$f(x_2) = \cos x$$

$$f(x_3) = 0.5 + \cos x$$

$$-1.1 \leq Y < 1.6$$

$$0 \leq X \leq 180$$

X INC 10

Axis 0

```
01 LBL "FUN
C"
02 RCL 03
03 INT
04 SIN
05 STO 05
06 LASTX
07 COS
08 STO 06
09 .5
10 +
11 STO 07
12 RTN
13 END
```

SOLUTION:

Input	Function	Display	Comments
			Prior to executing PRPLX the function routine must be entered, a listing of the example is shown above. (X must be recalled from store 03, ie RCL 03 as step 02 above)
'FUNC'	(XE3)'PRPLX'	NAME?	
1.6	R/S	Y MAX?	
-1.1	R/S	Y MIN?	
0	R/S	AXIS?	
	R/S	X MIN?	The Y axis will now be printed.
0	R/S	X INC?	
10	R/S	X MAX?	
180	R/S	NO. LINES?	
3	R/S		The functions will be plotted as shown below.
			$f(x_1)$ - 1 dot $f(x_2)$ - 2 dots $f(x_3)$ - 3 dots

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USER INSTRUCTIONS

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SIZE:
(HP-41C) 015

STEP	INSTRUCTIONS	INPUT	FUNCTION	DISPLAY
1.	Enter program PRPLX			
2.	Enter routine to solve $f(x_i)$			
3.			(Σ EQ)PRPLX	NAME?
4.	Enter name of function routine	NAME	R/S	Y MAX?
5.	Enter Y max ($Y_{max} > f(x_i)_{max}$)	Y MAX	R/S	Y MIN?
6.	Enter Y min	Y MIN	R/S	AXIS?
7.	Enter position of axis required	AXIS	R/S	Axis plot X MIN?
8.	Enter data for X axis	X MIN	R/S	X INC?
		X INC	R/S	X MAX?
		X MAX	R/S	NO. LINES?
9.	Enter No. of lines (curves) to be plotted (ie 2 for 2 functions, 3 for 3 functions + axis)	No.LINE	R/S	Routine plot
	Note: When entering routine for solving $f(x_i)$, the x value is in STO 03. Routine should start: LBL ' ' RCL 03 INT etc... $f(x)$ should be returned to stores 05,06,07 respectively.			

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STEP/ LINE	KEY ENTRY	KEY CODE (67/97 only)	COMMENTS	STEP/ LINE	KEY ENTRY	KEY CODE (67/97 only)	COMMENTS
01	LBL "PRP			47	LBL 92		
LX"				48	ST+ 03		
02	CF 29			49	"NO. LIN		NO. OF LINES TO PRINT
03	CF 00			ES?"			
04	CLRG			50	PROMPT		
05	"NAME?"			51	1		
06	AON			52	+		
07	PROMPT			53	STO 13		
08	AOFF			54	LBL 98		
09	ASTO 14		STORE FUNCTION NAME	55	RCL 12		
10	ADV			56	STO 04		
11	CF 12			57	0		
12	"Y MAX?"		COORDINATES TO PRINT	58	STO 11		
13	PROMPT		AXIS	59	FIX 0		
14	STO 01			60	CLA		
15	"Y MIN?"			61	1 E3		
16	PROMPT			62	RCL 03		
17	STO 00			63	X<Y?		
18	-			64	" "		
19	140			65	1 E2		
20	STO 02			66	X<>Y		
21	/			67	X<Y?		
22	STO 08			68	"I "		
23	"AXIS?"			69	10		
24	PROMPT			70	X<>Y		
25	STO 04			71	X<Y?		
26	XROM "PR		REQ PRAXIS, PRINTER	72	"I "		
AXIS"			FUNCTION	73	INT		
27	FIX 1			74	ARCL X		
28	RCL 04			75	ACA		
29	XEQ 99			76	FIX 1		
30	STO 12			77	XEQ IND		REQ FUNCTION SUBROUTINE
31	"X MIN?"		X-COORDINATES AND	14			
32	PROMPT		INCREMENTS	78	RCL 07		
33	STO 03			79	XEQ 99		
34	"X INC?"			80	STO 07		
35	PROMPT			81	RCL 06		
36	X<0?			82	XEQ 99		
37	XEQ 93			83	STO 06		
38	1 E5			84	RCL 05		
39	/			85	XEQ 99		
40	ST+ 03			86	STO 05		
41	"X MAX?"			87	LBL 95		
42	PROMPT			88	4		
43	FS? 05			89	STO 09		
44	GTO 92			90	RCL 13		
45	1 E3			91	3		
46	/			92	+		
				93	1 E3		

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STEP/ LINE	KEY ENTRY	KEY CODE (67/97 only)	COMMENTS	STEP/ LINE	KEY ENTRY	KEY CODE (67/97 only)	COMMENTS
94	/			137	LBL 91		
95	5			138	FS?C 00		
96	+			139	RTN		
97	STO 10			140	DSE 03		
98	LBL 97			141	GTO 98		
99	RCL IND			142	SF 00		
09				143	CF 05		
100	RCL IND			144	GTO 98		
10				145	LBL 93		
101	X<=Y?			146	ABS		
102	XEQ 96			147	SF 05		
103	ISG 10			148	RCL 03		
104	GTO 97			149	ST- 03		
105	1 E3			150	1 E3		
106	RCL IND			151	/		
09				152	STO 03		
107	X=Y?			153	RDN		
108	GTO 94			154	RTN		
109	FIX 0			155	LBL 94		
110	RND			156	1 E3		
111	SKPCOL			157	STO 04		
112	1			158	1		
113	+			159	ST+ 11		
114	ST- 04			160	RTN		
115	ST- 05		REDUCE PLOT BY NO. OF COLUMNS OF F(X,N-1)	161	LBL 99		EXPRESS Y IN TERMS OF COLUMNS
116	ST- 06			162	RCL 00		
117	ST- 07			163	-		
118	1 E3			164	RCL 08		
119	STO IND			165	/		
09				166	RTN		
120	RCL 04			167	LBL 96		EXCHANGE PLOT LINE IN SORT FOR LOWEST VALUE
121	X<=0?			168	RCL 10		
122	XEQ 94			169	INT		
123	XEQ IND			170	STO 09		
09				171	RTN		
124	ACCOL		ACCUMULATE PLOT	172	LBL 06		PLOT CHARACTER F(X2)
125	1			173	24		
126	ST+ 11			174	RTN		
127	RCL 13			175	LBL 05		PLOT CHARACTER F(X1)
128	RCL 11			176	8		
129	X*Y?			177	RTN		
130	GTO 95			178	LBL 04		PLOT CHARACTER AXIS
131	PRBUF		PLOT	179	119		
132	FS? 05			180	RTN		
133	GTO 91			181	LBL 07		PLOT CHARACTER F(X3)
134	ISG 03			182	56		
135	GTO 98			183	END		
136	RTN						

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REGISTERS, STATUS, FLAGS, ASSIGNMENTS

[illegible]

ROW 1 (1 : 3)



ROW 2 (4 : 10)



ROW 3 (11 : 15)



ROW 4 (15 : 21)



ROW 5 (22 : 27)



ROW 6 (28 : 32)



ROW 7 (33 : 37)



ROW 8 (38 : 41)



ROW 9 (42 : 48)



ROW 10 (48 : 50)



ROW 11 (51 : 61)



ROW 12 (61 : 68)



ROW 13 (68 : 75)



ROW 14 (76 : 82)



ROW 15 (83 : 92)



ROW 16 (93 : 100)



ROW 17 (101 : 106)



ROW 18 (106 : 114)



ROW 19 (114 : 120)



ROW 20 (121 : 128)



ROW 21 (129 : 134)



ROW 22 (135 : 141)



ROW 23 (141 : 147)



ROW 24 (148 : 156)



ROW 25 (156 : 165)



ROW 26 (166 : 176)



ROW 27 (177 : 183)

