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1 *****
2 *          RSX - ERWEITERUNG :          NACHLADBARER ELLIPSE - BEFEHL          *
3 *                                                                                      *
4 * FORMAT :                                                                                      *
5 *                                                                                      *
6 * !ELLIPSE,<X-ORI>,<Y-ORI>,<RADIUS(X)>,<RADIUS(Y)>,<WINKEL>,[<PEN>] *
7 *                                                                                      *
8 * WOLFGANG BOENIGK, LANDRAT-VON-OSTMAN-STR. 3, 4500 OSNABRUECK *
9 *****
100 '
110 MEMORY &A2FF
120 adr=&A32D
130 READ a$
140 IF a$="ende" GOTO 210
150 a$="&"+a$
160 a=VAL(a$)
170 POKE adr,a
180 control=control+a
190 adr=adr+1
200 GOTO 130
210 IF control <> 38630 THEN PRINT "Fehler in DATA's !":END
220 CALL &A32D
230 '
240 DATA 01,36,A3,21,43,A3,C3,D1,BC,3B,A3,C3,47,A3,45,4C,4C
250 DATA 49,50,53,C5,00,00,00,00,00,F5,CD,E1,BB,67,F1,FE,05
260 DATA 28,0D,FE,06,C0,DD,7E,00,CD,DE,BB,DD,23,DD,23,7C,F5
270 DATA DD,56,09,DD,5E,08,DD,66,07,DD,6E,06,CD,C9,BB,DD,66
280 DATA 01,DD,6E,00,22,0A,A3,DD,66,03,DD,6E,02,22,05,A3,DD

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290 DATA 66,05,DD,6E,04,7C,11,00,A3,CD,40,BD,2A,05,A3,7C,11
300 DATA 05,A3,CD,40,BD,2A,0A,A3,7C,11,0A,A3,CD,40,BD,3E,FF
310 DATA 32,F7,BB,01,00,00,C5,C5,E1,7C,11,23,A3,D5,CD,40,BD
320 DATA E1,11,28,A3,01,05,00,ED,B0,21,23,A3,E5,CD,88,BD,E1
330 DATA 11,00,A3,CD,61,BD,21,28,A3,E5,CD,8B,BD,E1,11,05,A3
340 DATA CD,61,BD,21,0A,A3,11,0F,A3,D5,01,05,00,ED,B0,E1,E5
350 DATA CD,8B,BD,E1,11,19,A3,01,05,00,ED,B0,21,0A,A3,11,14
360 DATA A3,D5,01,05,00,ED,B0,E1,E5,CD,88,BD,E1,11,1E,A3,01
370 DATA 05,00,ED,B0,21,0F,A3,11,23,A3,CD,61,BD,21,14,A3,11
380 DATA 28,A3,CD,61,BD,21,0F,A3,11,14,A3,CD,58,BD,21,19,A3
390 DATA E5,11,28,A3,CD,61,BD,21,1E,A3,E5,11,23,A3,CD,61,BD
400 DATA D1,E1,CD,5B,BD,21,0F,A3,CD,63,A4,E5,21,19,A3,CD,63
410 DATA A4,D1,CD,EA,BB,C1,03,21,68,01,AF,ED,42,C2,AA,A3,F1
420 DATA CD,DE,BB,C9,CD,46,BD,DD,CB,03,7E,C4,C7,BD,C9,ende
430
440 'BEISPIELPROGRAMM
450
460 MODE 1
470 MOVE 0,200 : DRAWR 640,0
480 MOVE 320,0 : DRAWR 0,400
490 !ELLIPSE,320,200,150,75,0
500 !ELLIPSE,320,200,150,75,45,2
510 !ELLIPSE,320,200,150,75,135

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Assembler-Listing

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A000      10      ; *****
A000      20      ; **      RSX - Erweiterung      **
A000      30      ; ** Nachladbarer ELLIPSE - Befehl **
A000      40      ; **      Wolfgang Boenigk      **
A000      50      ; *****
A000      60      ;
A300      70      ORG      &A300
A300      80      LOGEXT  EQU      &BCD1
A300      90      GETPEN  EQU      &BBE1
A300     100      SETPEN  EQU      &BBDE
A300     110      ORIGIN  EQU      &BBC9
A300     120      INTFLO  EQU      &BD40 ; Integer nach Fließkomma
A300     130      SINUS   EQU      &BD88
A300     140      COS     EQU      &BD8B
A300     150      MULT    EQU      &BD61 ; Fließkommaoperation
A300     160      ADDIER  EQU      &BD58 ; Fließkommaoperation
A300     170      SUBTRA  EQU      &BD5B ; Fließkommaoperation
A300     180      PLOT    EQU      &BBEA
A300     190      FLOINT  EQU      &BD46 ; Fließkomma nach Integer
A300     200      CHGSGN  EQU      &BDC7 ; Vorzeichenwechsel Integer
A300     210      RX      DEFS 5 ; Radius von x
A305     220      RY      DEFS 5 ; Radius von y
A30A     230      PHI     DEFS 5
A30F     240      ZW1     DEFS 5
A314     250      ZW2     DEFS 5
A319     260      ZW3     DEFS 5
A31E     270      ZW4     DEFS 5
A323     280      X       DEFS 5
A328     290      Y       DEFS 5
A32D     300      ;
A32D 010000 310      LD      BC,RSX
A330 210000 320      LD      HL,KERNAL
A333 C3D1BC 330      JP      LOGEXT

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**** Zeile 310 : RSX=&A336
A336 0000 340 RSX DEFW TABLE
A338 C30000 350 JP ELLIPS
**** Zeile 340 : TABLE=&A33B
A33B 454C4C495053 360 TABLE DEFM "ELLIPS"
A341 C5 370 DEFB &C5 ; "E"+&80
A342 00 380 DEFB 0
**** Zeile 320 : KERNAL=&A343
A343 390 KERNAL DEFS 4
**** Zeile 350 : ELLIPS=&A347
A347 F5 400 ELLIPS PUSH AF
A348 CDE1BB 410 CALL GETPEN
A34B 67 420 LD H,A
A34C F1 430 POP AF
A34D FE05 440 CP 5
A34F 28FE 450 JR Z,DOELLI
A351 FE06 460 CP 6
A353 C0 470 RET NZ
A354 DD7E00 480 LD A,(IX+0) ; wenn zusaetzlich
A357 CDDEBB 490 CALL SETPEN ; Pen angegeben
A35A DD23 500 INC IX
A35C DD23 510 INC IX
**** Zeile 450 : DOELLI=&A35E
A35E 7C 520 DOELLI LD A,H
A35F F5 530 PUSH AF
A360 DD5609 540 LD D,(IX+9)
A363 DD5E08 550 LD E,(IX+8) ; X-Position von Origin
A366 DD6607 560 LD H,(IX+7) ; Y-Position von Origin
A369 DD6E06 570 LD L,(IX+6) ;
A36C CDC9BB 580 CALL ORIGIN
A36F DD6601 590 LD H,(IX+1) ; Winkel
A372 DD6E00 600 LD L,(IX+0)
A375 220AA3 610 LD (PHI),HL
A378 DD6603 620 LD H,(IX+3) ; Radius (y)
A37B DD6E02 630 LD L,(IX+2)
A37E 2205A3 640 LD (RY),HL
A381 DD6605 650 LD H,(IX+5) ; Radius (x)
A384 DD6E04 660 LD L,(IX+4)
A387 7C 670 LD A,H
A388 1100A3 680 LD DE,RX
A38B CD40BD 690 CALL INTFLO
A38E 2A05A3 700 LD HL,(RY)
A391 7C 710 LD A,H
A392 1105A3 720 LD DE,RX
A395 CD40BD 730 CALL INTFLO
A398 2A0AA3 740 LD HL,(PHI)
A39B 7C 750 LD A,H
A39C 110AA3 760 LD DE,PHI
A39F CD40BD 770 CALL INTFLO
A3A2 3EFF 780 LD A,&FF
A3A4 32F7B8 790 LD (&B8F7),A ; -> DEG
A3A7 010000 800 LD BC,0 ; Zaehler
A3AA C5 810 LOOP PUSH BC
A3AB C5 820 PUSH BC
A3AC E1 830 POP HL
A3AD 7C 840 LD A,H
A3AE 1123A3 850 LD DE,X
A3B1 D5 860 PUSH DE
A3B2 CD40BD 870 CALL INTFLO ; Zaehler nach FLO
A3B5 E1 880 POP HL

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A3B6	1128A3	890	LD DE,Y	
A3B9	010500	900	LD BC,5	
A3BC	EDB0	910	LDIR ;	Zaehler v.X->Y kopieren
A3BE	2123A3	920	LD HL,X	
A3C1	E5	930	PUSH HL	
A3C2	CD88BD	940	CALL SINUS ;	sin(z)
A3C5	E1	950	POP HL	
A3C6	1100A3	960	LD DE,RX	
A3C9	CD61BD	970	CALL MULT ;	r(x)*sin(z)
A3CC	2128A3	980	LD HL,Y	
A3CF	E5	990	PUSH HL	
A3D0	CD88BD	1000	CALL COS ;	cos(z)
A3D3	E1	1010	POP HL	
A3D4	1105A3	1020	LD DE,RY	
A3D7	CD61BD	1030	CALL MULT ;	r(y)*cos(z)
A3DA	210AA3	1040	LD HL,PHI	
A3DD	110FA3	1050	LD DE,ZW1	
A3E0	D5	1060	PUSH DE	
A3E1	010500	1070	LD BC,5	
A3E4	EDB0	1080	LDIR ;	phi nach ZW1
A3E6	E1	1090	POP HL	
A3E7	E5	1100	PUSH HL	
A3E8	CD88BD	1110	CALL COS ;	cos(phi)
A3EB	E1	1120	POP HL	
A3EC	1119A3	1130	LD DE,ZW3	
A3EF	010500	1140	LD BC,5	
A3F2	EDB0	1150	LDIR ;	cos(phi) nach ZW3 kopieren
A3F4	210AA3	1160	LD HL,PHI	
A3F7	1114A3	1170	LD DE,ZW2	
A3FA	D5	1180	PUSH DE	
A3FB	010500	1190	LD BC,5	
A3FE	EDB0	1200	LDIR ;	phi nach ZW2
A400	E1	1210	POP HL	
A401	E5	1220	PUSH HL	
A402	CD88BD	1230	CALL SINUS ;	sin(phi)
A405	E1	1240	POP HL	
A406	111EA3	1250	LD DE,ZW4	
A409	010500	1260	LD BC,5	
A40C	EDB0	1270	LDIR ;	sin(phi) nach ZW4 kopieren
A40E	210FA3	1280	LD HL,ZW1	
A411	1123A3	1290	LD DE,X	
A414	CD61BD	1300	CALL MULT ;	cos(phi)*x
A417	2114A3	1310	LD HL,ZW2	
A41A	1128A3	1320	LD DE,Y	
A41D	CD61BD	1330	CALL MULT ;	sin(phi)*y
A420	210FA3	1340	LD HL,ZW1	
A423	1114A3	1350	LD DE,ZW2	
A426	CD58BD	1360	CALL ADDIER ;	cos(phi)*x+sin(phi)*y
A429	2119A3	1370	LD HL,ZW3	
A42C	E5	1380	PUSH HL	
A42D	1128A3	1390	LD DE,Y	
A430	CD61BD	1400	CALL MULT ;	cos(phi)*y
A433	211EA3	1410	LD HL,ZW4	
A436	E5	1420	PUSH HL	
A437	1123A3	1430	LD DE,X	
A43A	CD61BD	1440	CALL MULT ;	sin(phi)*x
A43D	D1	1450	POP DE	
A43E	E1	1460	POP HL	
A43F	CD58BD	1470	CALL SUBTRA ;	-sin(phi)*x+cos(phi)*y
A442	210FA3	1480	LD HL,ZW1	
A445	CD0000	1490	CALL SFI	

A448	E5	1500	PUSH	HL	
A449	2119A3	1510	LD	HL,ZW3	
A44C	CD0000	1520	CALL	SFI	
A44F	D1	1530	POP	DE	
A450	CDEABB	1540	CALL	PLOT	
A453	C1	1550	POP	BC	
A454	03	1560	INC	BC	
A455	216801	1570	LD	HL,360	
A458	AF	1580	XOR	A ;	Carry loeschen
A459	ED42	1590	SBC	HL,BC	
A45B	C2AAA3	1600	JP	NZ,LOOP	
A45E	F1	1610	POP	AF	
A45F	CDDEBB	1620	CALL	SETPEN	
A462	C9	1630	RET		
****	Zeile	1490	:	SFI=&A463	
****	Zeile	1520	:	SFI=&A463	
A463	CD46BD	1640	SFI	CALL	FLOINT
A466	DDCB037E	1650	BIT	7,(IX+3) ;	Zahl negativ ?
A46A	C4C7BD	1660	CALL	NZ,CHGSGN ;	wenn ja, dann Vorzeichen
A46D		1670		;	von Integerzahl wechseln
A46D	C9	1680	RET		

Programm : BASIC - Erweiterung um den Befehl ELLIPSE
 Start : &A300 Ende : &A46D
 Laenge : 016E