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10  MODE 1
20  BORDER 11 : INK 0,1 : INK 1,24 : INK 2,0
30  PAPER 0 : PEN 1

40  :
50  CLS : PRINT SPACE$(15); "PATTERNS"
60  PRINT : PRINT : PRINT "  Please Select One of the Following"
70  PRINT : PRINT : PRINT " *****TYPE*****SELECT BY PRESSING"
80  PRINT : PRINT " *****Rectangle"; SPACE$(15); "R"
90  PRINT : PRINT : PRINT " *****Triangle"; SPACE$(16); "T"
100 PRINT : PRINT : PRINT " *****Ellipse"; SPACE$(17); "E"
110 PRINT : PRINT : PRINT " *****Cardioid"; SPACE$(16); "C"
120 PRINT : PRINT : PRINT " *****Spiral"; SPACE$(18); "S"
130 PRINT : PRINT : PRINT " *****Lemniscate"; SPACE$(14); "L";

140 :
150 x$=INKEY$ : IF x$="" THEN 150 ELSE IF x$<>"r" AND x$<>"R" AND x$<>"t" AND x$<>"T" AND x$<>"e" AND x$<>"E" AND x$<>"c" AND x$<>"C" AND x$<>"s" AND x$<>"S" AND x$<>"l" AND x$<>"L" THEN 10
160 BORDER 0 : PAPER 2 : CLS : INPUT "Colour"; z$ : IF z$<>" " THEN c1=VAL(z$) : PRINT
170 INK 1,c1
180 INPUT "Starting X co-ord. (-320 to 320)"; z$ : IF z$<>" " THEN sx=VAL(z$) : PRINT
190 INPUT "Starting Y co-ord. (-200 to 200)"; z$ : IF z$<>" " THEN sy=VAL(z$) : PRINT
200 INPUT "Number of Shapes"; z$ : IF z$<>" " THEN ns=VAL(z$) : PRINT
210 INPUT "Increment in X (-640 to 640)"; z$ : IF z$<>" " THEN ix=VAL(z$) : PRINT
220 INPUT "Increment in Y (-400 to 400)"; z$ : IF z$<>" " THEN iy=VAL(z$) : PRINT

230 :
240 ORIGIN 320,200
250 MOVE 0,0
260 IF x$="r" OR x$="R" THEN 390 ELSE IF x$="t" OR x$="T" THEN 290 ELSE IF x$="e" OR x$="E" THEN 520
270 IF x$="c" OR x$="C" THEN 630 ELSE IF x$="s" OR x$="S" THEN 710 ELSE 800

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280 :
290 INPUT "Start _triangle_ Size_ (0_ to_ ...)";z$: IF z$<>" " THEN ts=VAL(z$) : PRINT
300 INPUT "Start _Angle_ (0_ to_ 6.5)";z$: IF z$<>" " THEN an=VAL(z$) : PRINT
310 INPUT "Increment _in_ Size";z$: IF z$<>" " THEN it=VAL(z$) : PRINT
320 INPUT "Increment _in_ Angle";z$: IF z$<>" " THEN ia=VAL(z$)
330 CLS
340 FOR i=1 TO ns : an=an+ia : sx=sx+ix : sy=sy+iy : ts=ts+it
350 GOSUB 880
360 NEXT
370 IF INKEY$="_" THEN 10 ELSE 370

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380 :
390 rx(1)=sx : ry(1)=sy : INPUT "Corner _point_ X_ (-320_ to_ 320)";z$: IF z$<>" " THEN rx(2)=VAL(z$) : PRINT
400 INPUT "Corner _point_ Y_ (-200_ to_ 200)";z$: IF z$<>" " THEN ry(2)=VAL(z$) : PRINT
410 INPUT "Warp _in_ X";z$: IF z$<>" " THEN wx=VAL(z$) : PRINT
420 INPUT "Warp _in_ Y";z$: IF z$<>" " THEN wy=VAL(z$) : PRINT
430 INPUT "Increment _in_ X_ warp";z$: IF z$<>" " THEN iw(1)=VAL(z$) : PRINT
440 INPUT "Increment _in_ Y_ warp";z$: IF z$<>" " THEN iw(2)=VAL(z$)
450 CLS
460 FOR i=1 TO ns : rx(1)=rx(1)+ix : ry(1)=ry(1)+iy : rx(2)=rx(2)+ix : ry(2)=ry(2)+iy
470 wx=wx+iw(1) : wy=wy+iw(2)
480 GOSUB 950
490 NEXT
500 IF INKEY$="_" THEN 10 ELSE 500

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510 :
520 INPUT "Semi-major _axis_ (-320_ to_ 320)";z$: IF z$<>" " THEN a=VAL(z$) : PRINT
530 INPUT "Semi-minor _axis_ (-200_ to_ 200)";z$: IF z$<>" " THEN b=VAL(z$) : PRINT
540 INPUT "Increment _major_ axis";z$: IF z$<>" " THEN ia=VAL(z$) : PRINT
550 INPUT "Increment _minor_ axis";z$: IF z$<>" " THEN ib=VAL(z$) : PRINT
560 CLS
570 FOR i=1 TO ns : a=a+ia : b=b+ib
580 sx=sx+ix : sy=sy+iy

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590 GOSUB 1050
600 NEXT
610 IF INKEY$="." THEN 10 ELSE 610

620 :
630 INPUT "Cardioid factor (-320 to 320)";z$: IF z$<>"" TH
EN a=VAL(z$) : PRINT
640 INPUT "Increment factor";z$: IF z$<>"" THEN ia=VAL(z$)
: PRINT
650 CLS
660 FOR i=1 TO ns : a=a+ia : sx=sx+ix : sy=sy+iy
670 GOSUB 1110
680 NEXT
690 IF INKEY$="." THEN 10 ELSE 690

700 :
710 INPUT "Spiral factor";z$: IF z$<>"" THEN a=VAL(z$) : P
RINT
720 INPUT "Maximum angle";z$: IF z$<>"" THEN ma=VAL(z$) :
PRINT
730 INPUT "Increment in factor";z$: IF z$<>"" THEN ia=VAL(
z$)
740 CLS
750 FOR i= 1 TO ns : a=a+ia : sx=sx+ix : sy=sy+iy
760 GOSUB 1180
770 NEXT
780 IF INKEY$="." THEN 10 ELSE 780

790 :
800 INPUT "Lemniscate factor (large)";z$: IF z$<>"" THEN a
=VAL(z$) : PRINT
810 INPUT "Increment factor";z$: IF z$<>"" THEN ia=VAL(z$)

820 CLS
830 FOR i=1 TO ns : a=a+ia : sx=sx+ix : sy=sy+iy
840 GOSUB 1260
850 NEXT
860 IF INKEY$="." THEN 10 ELSE 860

870 :
880 REM triangle
890 MOVE sx-ts*COS(an),sy-ts*SIN(an)
900 DRAW 2*ts*COS(an),0
910 DRAW -ts*COS(an),2*ts*SIN(an)
920 DRAW -ts*COS(an),-2*ts*SIN(an)
930 RETURN

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940 :
950 REM rectangle
960 t1=rx(1)-rx(2) : t2=ry(1)-ry(2)
970 MOVE rx(1),ry(1)
980 IF t1=0 OR t2=0 THEN DRAW rx(2),ry(2) : RETURN
990 DRAWR wx,wy-t2
1000 DRAW rx(2),ry(2)
1010 DRAWR wx,wy+t2
1020 DRAW rx(1),ry(1)
1030 RETURN

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1040 :
1050 REM ellipse
1060 MOVE sx+a,sy
1070 FOR an = 0 TO 6.3 STEP 0.1
1080 DRAW a*COS(an)+sx, b*SIN(an)+sy
1090 NEXT : RETURN

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1100 :
1110 REM cardioid
1120 MOVE 2*a+sx,sy
1130 FOR an = 0 TO 6.3 STEP 0.1
1140 r=a*(1+COS(an))
1150 DRAW r*COS(an)+sx, r*SIN(an)+sy
1160 NEXT : RETURN

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1170 :
1180 REM spiral
1190 MOVE sx, sy
1200 FOR an=0 TO ma STEP 0.1
1210 r=a*an
1220 DRAW r*COS(an)+sx, r*SIN(an)+sy
1230 NEXT
1240 RETURN

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1250 :
1260 REM lemniscate
1270 FOR an=0 TO 3.2 STEP 0.05
1280 r=(ABS(a*LIS(an)))^0.5
1290 PLOT r*COS(an)+sx, r*SIN(an)+sy
1300 PLOT -r*COS(an)+sx, -r*SIN(an)+sy
1310 NEXT : RETURN

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# ChexSum Tables

10 =	220	460 =	8534	910 =	3330
20 =	1038	470 =	3443	920 =	3575
30 =	467	480 =	406	930 =	201
40 =	0	490 =	176	940 =	0
50 =	1512	500 =	1652	950 =	0
60 =	3878	510 =	0	960 =	3470
70 =	2795	520 =	5114	970 =	1193
80 =	2226	530 =	5121	980 =	3298
90 =	2294	540 =	4994	990 =	1538
100 =	2176	550 =	5007	1000 =	1169
110 =	2254	560 =	138	1010 =	1537
120 =	2092	570 =	3965	1020 =	1167
130 =	2550	580 =	3206	1030 =	201
140 =	0	590 =	251	1040 =	0
150 =	14059	600 =	176	1050 =	0
160 =	4207	610 =	1507	1060 =	1485
170 =	601	620 =	0	1070 =	2925
180 =	5393	630 =	5135	1080 =	3828
190 =	5421	640 =	4627	1090 =	378
200 =	4552	650 =	138	1100 =	0
210 =	5103	660 =	5866	1110 =	0
220 =	5093	670 =	311	1120 =	1747
230 =	0	680 =	176	1130 =	2925
240 =	576	690 =	1587	1140 =	2007
250 =	278	700 =	0	1150 =	3861
260 =	7008	710 =	4208	1160 =	378
270 =	5025	720 =	4312	1170 =	0
280 =	0	730 =	4682	1180 =	0
290 =	5465	740 =	138	1190 =	1003
300 =	4676	750 =	5866	1200 =	2577
310 =	4665	760 =	381	1210 =	1326
320 =	4562	770 =	176	1220 =	3861
330 =	138	780 =	1422	1230 =	176
340 =	7676	790 =	0	1240 =	201
350 =	336	800 =	5254	1250 =	0
360 =	176	810 =	4435	1260 =	0
370 =	1522	820 =	138	1270 =	3079
380 =	0	830 =	5866	1280 =	2491
390 =	7398	840 =	461	1290 =	3901
400 =	5218	850 =	176	1300 =	4359
410 =	3837	860 =	1502	1310 =	378
420 =	3839	870 =	0		
430 =	4915	880 =	0		
440 =	4725	890 =	4123		
450 =	138	900 =	1808		
				TOTAL =	310147