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590 LET j = v/r
600 LET k = k+j
610 REM Clear previous spaceship
620 PLOT INVERSE 1: x,y
630 PLOT INVERSE 1: x,y+1
640 PLOT INVERSE 1: x-1,y
650 LET x = 127+r*SIN k
660 LET y = 87+r*COS k
670 IF x < 225 AND x >= 1 AND y >= 0 AND y <= 174 THEN GO TO 710
680 LET x = 0
690 LET y = 0
700 GO TO 750
710 REM Draw new spaceship
720 PLOT x,y
730 PLOT x-1,y
740 PLOT x,y+1
750 IF fu < 0 THEN GOSUB 950
760 LET h = r-r1
770 PRINT AT 21, 0: INT (fu*10)/10: " □ □ ";
780 PRINT AT 21, 8: INT (v*100): " □ □ ";
790 PRINT AT 21, 16: INT h: " □ □ ";
800 PRINT AT 21, 24: INT (u*100): " □ □ ";
810 IF h <= 0 THEN GO TO 830
820 GO TO 350
830 REM AI lunar surface
840 IF ABS v > 0.04 THEN GO TO 900
850 IF ABS u > 0.15 THEN GO TO 900
860 CLS
870 PRINT AT 20, 0: "SAFE LANDING - WELL DONE"
880 FOR x = 0 TO 300: NEXT x
890 GO TO 100
900 REM Impact with the moon
910 CLS
920 PRINT: FLASH 1: "TOO FAST >>> YOU CRASHED"
930 PAUSE 200
940 GO TO 100
950 REM Out of fuel
960 PRINT AT 20, 0: FLASH 1: "EMPTY":
970 LET fu = 0
980 RETURN

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Note: □ indicates a space.

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APOLLO PROGRAM LISTING
100 REM APOLLO MOON LANDER
110 REM Copyright by A C Dickens
120 REM December 1982
130 LET r1 = 30: LET s = 0
140 REM Draw the moon
150 CLS: CIRCLE 127, 87, r1
160 CIRCLE 110, 96, 4
170 CIRCLE 140, 100, 10
180 CIRCLE 125, 75, 7
190 CIRCLE 145, 77, 5
200 CIRCLE 120, 78, 14
210 PRINT AT 20, 0: "FUEL □ □ □ □ SPEED □ □ □ □ HEIGHT □ □ □ □ DESCENT"
220 LET x = 127
230 LET y = 157
240 LET r = 70
250 LET v = 1
260 LET kt = 70
270 LET p = 0.095
280 LET w = 1/70
290 LET am = 70
300 LET p1 = p/3
310 LET u = 0
320 LET k = 0
330 LET fu = 100
340 LET fl = 0.2
350 REM Get joystick input
360 IF fu = 0 THEN LET e = 31: GO TO 380
370 LET e = IN 63486 - 22A
380 LET f = INT (e/16): REM FIRE key
390 LET e = e-f*16
400 LET f1 = INT (e/8): REM LEFT key
410 LET e = e-f1*8
420 LET f3 = INT (e/4): REM DOWN key
430 LET e = e-f3*4
440 LET f2 = INT (e/2): REM RIGHT key
450 LET e = e-f2*2
460 LET f4 = INT e: REM UP key
470 LET f1 = (1-f1)*p
480 LET f2 = (1-f2)*p1
490 LET f3 = (1-f3)*p
500 LET f4 = (1-f4)*p1
510 IF f1 = 0 THEN LET fu = fu - 10: LET f1 = 5*p
520 IF f1 + f2 + f3 + f4 > 0 THEN LET fu = fu - fl
530 REM Calculate next position
540 LET f = (kt/r - v*v)/r
550 LET am = am + (f2 - f4)*r
560 LET u = u + (f1 - f3 - fl)
570 LET r = r + u
580 LET v = am/r

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