ROM dumping tools for TI-81

This is a collection of programs that may be useful when attempting to dump the ROM of a TI-81 calculator. It's not very well organized at the moment. Using these tools will require some technical skill, a lot of patience, and the willingness to crash your calculator a few times. There may even be bugs.

With that out of the way:

1. Materials Required
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1. A TI-81 graphing calculator (hopefully, any ROM version will do.)

2. A good set of batteries.

3. A digital camera capable of recording at least an hour of video. Resolution is important; frame rate, not so much. I used 640x480 at 10 fps.

4. A tripod.

5. Appropriate lighting.

6. A PC

2. Setting up the calculator

Enter the following as prgm1:

as shown on calc screen	spaces added for clarity	assembly code
:"77777777777777	" 7 7 7 7 7 7 7 7 7 7 7 7 7 7	171717171717171717171717171717
7≠DispGraphPT-On	7 ≠ DispGraph PT-On(	1721E4DC
(ιo^All-On6≤ln Xm	10^ All-On 6 ≤ ln Xmax	37CB1623347E
axDispGraphClrDr	DispGraph ClrDraw	E4E1
aw≤All-OnPT-Chg(	≤ All-On PT-Chg(	23CBDE
Y₂-Ontan¹ PT-Off	Y₂-On tan⁻¹ PT-Off(	CD3DDD
(7777TstepY₂-On1	7 7 7 7 Tstep Y₂-On 1	171717177CCD11
PT-Off(XminY₂-On	PT-Off(Xmin Y₂-On	DD7DCD
1PT-Off(sinh Xre	1 PT-Off(sinh Xres	11DD3E83
s[B]AnsXmax≤Y₂-O	[B] Ans Xmax ≤ Y₂-On	87577E23CD
n1PT-Off(5=ln 6√	1 PT-Off(5 = ln 6 √	11DD1520341632
Brow5=⁻8DispGrap	Brow 5 = (-) 8 DispGraph	7615203018E4
h7777¹((((Y₂-On.	7 7 7 7 ⁻¹ ((((Y₂-On .	17171717471F1F1F1FCD1A
PT-Off(CrowY₂-Of	PT-Off(Crow Y₂-Off	DD78D5
f,0)HistY₁┬/G6PT	, 0) Hist Y₁┬ / G 6 PT-Off(	1E101DA3C6295F16DD
-Off(.X₂┬-OnY₃=Y	. X₂┬-On Y₃ = Ymin	1AD1C32080
min°Round(R▸P(P▸	° Round(R▸P(P▸R(	4D4E4F50

R(RowSwap(Row+(*	RowSwap(Row+(*Row+(	515254
Row+(NDeriv(Rand	NDeriv(Rand	5558
GHIQSWθ8Y₂8Y₃┬Co	G H I Q S W θ 8 Y₂ 8 Y₃┬ Connected	5F6061696B6F7318C218CAAF
nnectedOW1JPT-Of	O W 1 J PT-Off(	676F1162DD
f(sinh Prgm¹.Y₃-	sinh Prgm ⁻¹ . Y₃-Off	3E07471AD6
Offcosh If 3≤Y₂c	cosh If 3 ≤ Y₂ cosh	40BE1323C240
osh PT-Off(Crowt	PT-Off(Crow tan⁻¹	DD783D
an¹ Y₂?PT-Off(n	Y₂ ? PT-Off(nPr	C245DD2B
Pr XmaxY₃-OffX₃┬	Xmax Y₃-Off X₃┬	7ED6C9
Y₂*Row+(PT-Off(≤	Y₂ *Row+(PT-Off(≤	C254DD23
<-PT-Off(OWX₃┬I*	< - PT-Off(O W X₃┬ I *Row(	2227DD676FC96153
Row(≤ArowIf sinh	≤ Arow If sinh	2374BE3E
P▸R("→Y₂	P▸R(" → Y₂	50

Enter the following as prgm2:

```
:X+1→X
:If X<9
:prgm2
:0→X
:Input X
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Enter the following as prgm3:

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:"PT-On(PT-On(PT
-On(PT-On(PT-On(
PT-On(PT-On(PT-O
n(PT-On(PT-On(PT
-On(PT-On(PT-On(
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-On(PT-On(PT-On(
PT-On(PT-On(PT-O
n(PT-On(PT-On(++
++++++++++++++++
++++++++++++"→Y4
```

Go to the Y= screen. Clear ALL equations (including the parametric ones.) Enter the following as Y_1:

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:Y1=(-1)^π
```

Execute the following:

Prgm1
Prgm3
0→{x}(1
π→{y}(1
1→{x}(2
1→{y}(2
LinReg

(the last part is just used to store a nice long expression in RegEQ.)

Go back to the Y= screen and scroll down to Y_3. Type RegEQ over and over until it won't let you type anything more.

3. Running the ROM dumper

3a. Turn the calculator off and back on.

3b. Do the following FIVE times:

- Run prgm2.
- At the prompt, type Y_1.
- An error message will be displayed. Press Enter to "Goto Error."
- Press 2nd, CLEAR to exit the Y= screen.

3c. Run prgm3.

If you typed everything correctly, the calculator will start printing out the contents of ROM. If you typed anything wrong, it will most likely either crash or do nothing. (If it does nothing, then immediately turn the calculator off and back on. Then clear the equations and start over.)

The ROM contents are printed in hexadecimal, but not using normal digits. The "digits" are as follows:

A = 0
B = 1
C = 2
D = 3
E = 4
F = 5
H = 6
I = 7
L = 8
S = 9
T = A
U = B
b = C
d = D

h = E
n = F

When you're done, press ON to exit the ROM dumper and turn the calculator off.

4. Recording the screen contents

To get a good ROM dump, you'll need to record the screen output very precisely. Use a tripod, and put both the camera and calculator somewhere where you're not likely to bump them by accident. Make sure the screen is well lit, and position the camera so that there is no glare, and the entire screen is (mostly) in focus.

Start recording before you run prgm3, and continue recording until you've gotten well past the point you want to stop (e.g., "LAAA".)