

29 September 2022, rev 1

C43 graphing example listed in the Forum:

<https://forum.swissmicros.com/viewtopic.php?f=2&t=2216&p=24433&hilit=Our+next+release+is+available%2C+mostly#p24433>

The brief: A program to create a simple sample graph - I used the stats system to enter 51 coordinates for two cycles of a sine wave. I inspect the STATS matrix thus created below. I draw the graph. For convenience, the ERPN commands are written in-line, as typed. Tip: I used battery power to test the program, but I would rather suggest USB power - matrix generation and graph preparation are quite a bit quicker on USB power:

First, set up, clear stats and create a loop counter R00 from 51 to 1 to create 51 coordinate points. I chose 51, because 25 x-points will be negative, 1 will be zero and 25 x-points will be positive.

```
f[PRGM] g[GTO] .. g[LBL] α SIN_EX ENTER
f[STAT] g[CLΣ] f[MODE] [RAD]
51 STO 00
g[LBL] α LOOP1 ENTER
```

(of course the g-shift was needed to get the number 1 (in LOOP1) in alpha mode)

Scale the counter to produce an x value in radians, from -2π to 2π , by doing: $\{(R00 - 1) / -25\} + 1\} * 2\pi$

```
RCL 00 1 - 25 CHS ÷ 1 + 2 f[π] × ×
```

Calculate the function $y = \sin(x)$, and swap to get y in Y and x in X

```
ENTER SIN X<>Y
```

Use $\Sigma+$ to add the coordinate point to the stats system and therefore to the STATS matrix.

```
Σ+
```

Repeat the loop, decrementing the loop counter until 0, and skip if 0

```
g[LOOP] DSZ 00
g[GTO] α LOOP1 ENTER
g[RTN] f[PRGM]
```

Now, set your favourite display mode, mine is

```
f[DISP] SIG 3
```

and run the program:

```
XEQ PROG S [SIN_EX]
```

After about 10 seconds the 51 points are written and you can check the points:

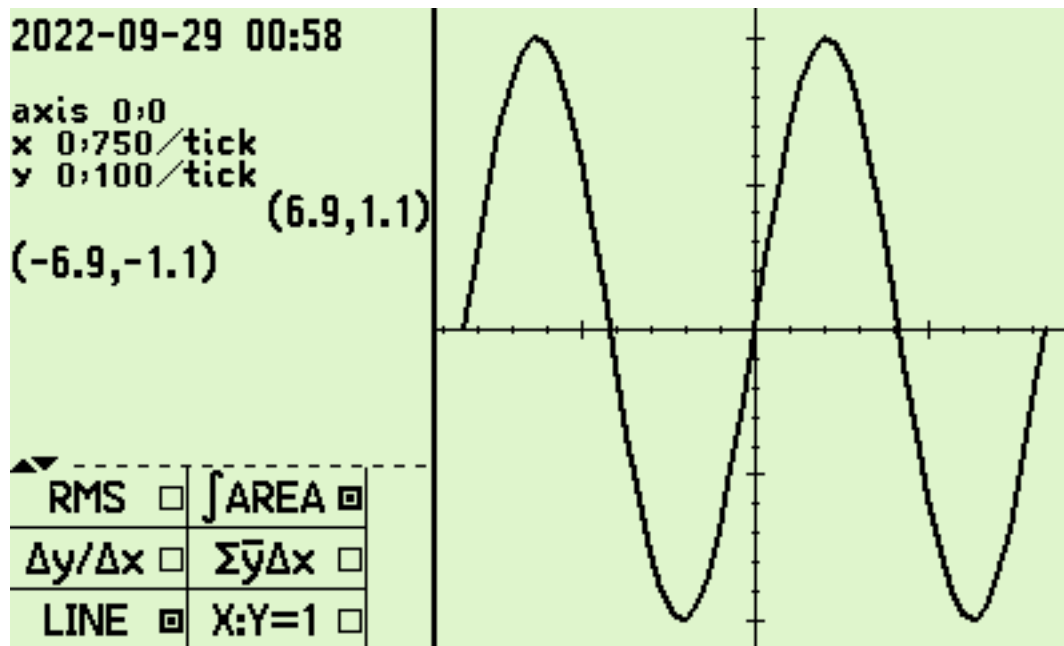
```
RCL VAR S STATS
```

After seeing the 51x2 matrix, you can plot it. There was no need to recall the matrix, it was only to demo matrix recall: Plot either using the standard linear regression visualisation

f[STAT] UP [ASSESS]

or use the preferred dedicated scientific graphing tool STAT.PLSTAT.

f[STAT] UP [PLSTAT]



Exercise: Go back to the program, and change the function from sin to sinc (from the f[MODE] TRIG menu) and plot it.