Lissajous Functions
Seaborg Conference
October, 2004

L. W. Ellerbruch

http://Ellerbruch.nmu.edu

Lissajous Functions

Lissajous Functions are parametric equations of the form f(x(t), y(t))

with $x(t) = \sin(a*t)$ and $y(t) = \cos(b*t)$ where $b = m*a + n$

Programming Considerations

Graph consecutive points and connect with line segments.
Range: $0 <= t <= 2*pi$
tStep changes the appearance of the graph considerably. Try pi/integer, where the integer is in the range 0..150.

Web Sources

The following is a link to a Geometer's Sketchpad project 73. This is a Lissajous Function resource for use with Geometer's Sketchpad.

http://www.keypress.com/sketchpad/general_resources/101_project_ideas/index.php

The MacTutor History of Mathematics archive has links to Lissajous and a Java Applet to display Lissajous Functions

http://www-history.mcs.st-andrews.ac.uk/history/index.html

http://www-history.mcs.st-andrews.ac.uk/history/Mathematicians/Lissajous.html

http://www-history.mcs.st-andrews.ac.uk/history/Curves/Lissajous.html

Ellerbruch web site

http://ellerbruch.nmu.edu
http://ellerbruch.nmu.edu/lfunctions/

TI graphing calculator program

The details for a complete program are on the next page.

```
Disp "SLIDE SHOW"
Disp "LISSAJOU FUNCTIONS"
Param
Radian
Ø→tMin
2π→tMax
π/3Ø→tStep
-.5→xMin
2.5→xMax
-.5→yMin
2.5→yMax
AxesOff
xt1=1+sin (A*t)
yt1=1+cos (B*t)
2→A
Lbl L
A+1→A
A+5→B
DispG
Goto L
```