

Lindenmayer System

Author

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This notebook downloaded from <http://mathworld.wolfram.com/notebooks/Fractals/LindenmayerSystem.nb>.

For more information, see Eric's *MathWorld* entry <http://mathworld.wolfram.com/LindenmayerSystem.html>.

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Additional Authors

L-system code from
Robert Dickau

<http://mathforum.org/advanced/robertd/lsys2d.html>

Code

Examples

```
lsystems = {
  {"32-segment curve", "F+F+F+F", {"F" -> "-F+F-F-F+F+FF-F+F+FF+F-F-FF+FF-FF+F+F-FF-F-F+FF-F-F+F+F-F+"}, 2, 90},
  {"box fractal", "F-F-F-F", {"F" -> "F-F+F+F-F"}, 3, 90},
  {"dragon curve", "FX", {"X" -> "X+YF+", "Y" -> "-FX-Y"}, 10, 90},
  {"Hilbert curve", "L", {"L" -> "+RF-LFL-FR+", "R" -> "-LF+RFR+FL-"}, 4, 90},
  {"Hilbert curve II", "X", {"X" -> "XFYFX+F+YFXFY-F-XFYFX", "Y" -> "YFXFY-F-XFYFX+F+YFXFY"}, 3, 90},
  {"Koch snowflake", "F--F--F", {"F" -> "F+F--F+F"}, 3, 60},
  {"Peano curve", "F", {"F" -> "F+F-F-F-F+F+F-F"}, 2, 90},
  {"Peano-Gosper curve", "FX", {"X" -> "X+YF++YF-FX--FXFX-YF+", "Y" -> "-FX+YFYF++YF+FX--FX-Y"}, 3, 60},
  {"quadratic Koch island", "F+F+F+F", {"F" -> "F-F+F+FFF-F-F+F"}, 2, 90},
  {"Sierpiński arrowhead", "YF", {"X" -> "YF+XF+Y", "Y" -> "XF-YF-X"}, 5, 60},
  {"Sierpiński curve", "F+XF+F+XF", {"X" -> "XF-F+F-XF+F+XF-F+F-X"}, 3, 90},
  {"Sierpiński sieve", "FXF--FF--FF", {"F" -> "FF", "X" -> "--FXF++FXF++FXF--"}, 4, 60}
};
```

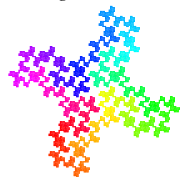
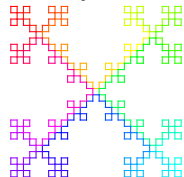
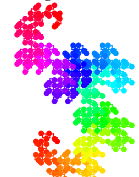
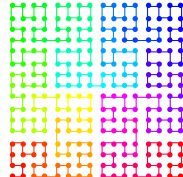
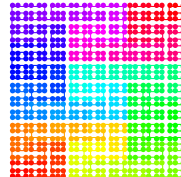
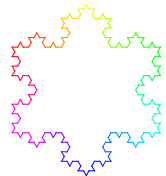
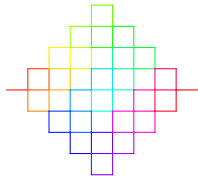
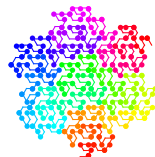
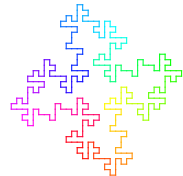
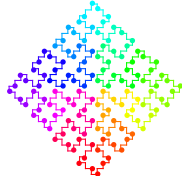
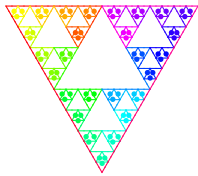
V5

V7

```

GraphicsGrid[
  Partition[
    LShowColor[LSystem@@ (Take[#, {2, -2}]),
      Last[#] Degree // N, PlotLabel -> TextCell[First[#], PageWidth -> 90, TextAlignment -> Center],
      BaseStyle -> {FontFamily -> "Times", FontSlant -> "Italic"}] & /@ lsystems,
    5,
    5,
    {1,
      1},
    {}],
  ImageSize ->
    500]

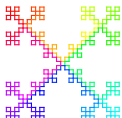
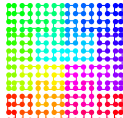
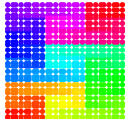
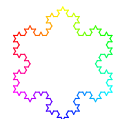
```

32-segment curve*box fractal**dragon curve**Hilbert curve**Hilbert curve II**Koch snowflake**Peano curve**Peano-Gosper curve**quad. Koch island**Sierpinski arrowhead**Sierpinski curve**Sierpinski sieve*

```

GraphicsGrid[
  Partition[
    LShowColor[LSystem@@ (Take[#, {2, -2}]), Last[#] Degree // N,
      PlotLabel → TextCell[Style[First[#], Italic], PageWidth → 90, TextAlignment → Center]] & /@ lsystems,
    4,
    4,
    {1,
     1},
    {}],
  Spacings →
  50]

```

2- segment curv*box fractal**dragon curve**Hilbert curve**Hilbert curve II**Koch snowflake**Peano curve**Peano- Gosper curve**quadratic Koch island**Sierpiński arrowhead**Sierpiński curve**Sierpiński sieve*