Package 'spt'

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Title Sierpinski Pedal Triangle

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Description A collection of algorithms related to Sierpinski pedal triangle (SPT).

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R topics documented:

`chaos` *Chaos Games for Sierpinski (Pedal) Triangle*

Description

To construct SPT/ST via Chaos games.

Usage

```
chaos(abc,...)
```

Arguments

abc	An R object of class 'st' or 'spt'.
...	Controls.

Details

If 'abc' is an acute triangle or obtuse 'st' triangle, the algorithms works. For obtuse 'spt' triangle, we need think of something else to measure the dimention.

Value

Iteration number should be large (say 10000).

Author(s)

B. Wang <bwang@jaguar1.usouthal.edu>

References

Zhang, XM., Hitt, R. Wang, B. and Ding, J. (2008). Sierpinski Pedal Triangle. Fractals. 16(2): 141-150.

Examples

```
(abc1 = st(50,60))
chaos(abc1, iter=2000)
(abc2 = spt(50,60))
chaos(abc2,iter=1000)
```

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spt *Sierpinski Pedal Triangle*

Description

To initial, plot and show a Sierpinski pedal triangles.

Usage

```
spt(A,B)
```

Arguments

A,B	The degrees of two of the three angles of a triangle.

Details

When the original triangle is an acute triangle, the area of the smallest SPT/PT to be drawn is determined by (tol * S), where S is the total area for plotting. No restriction is applied to `iter`.

If the original triangle is an obtuse triangle, the largest value of `iter` is 12.

tol: A stopping creiteria to draw the sub-SPT. Default value 0.0001.

Value

The dimension of the SPT will be returned if the original triangle is an acute triangle.

The viewport of showing the SPT/ST "abc" can be changed by changing the value of abc$viewport.

Author(s)

B. Wang <bwang@jaguar1.usouthal.edu>

References

Zhang, XM., Hitt, R. Wang, B. and Ding, J. (2008). Sierpinski Pedal Triangle. Fractals. 16(2): 141-150.

Examples

```
(abc = spt(50,60))
plot(abc, iter=7)

(abc = spt(50,10))
plot(abc, iter=3)
abc$viewport = c(0,-70,84,100)
plot(abc, iter=6)
```

`st` *Sierpinski Triangle*

Description

To initial, plot and show a Sierpinski triangles.

Usage

```
st(A,B)
```

Arguments

`A,B`	The degrees of two of the three angles of a triangle.

Details

When the original triangle is an acute triangle, the area of the smallest ST to be drawn is determined by (tol * S), where S is the total area for plotting. No restriction is applied to `iter`.

If the original triangle is an obtuse triangle, the largest value of `iter` is 12.

tol: A stopping creiteria to draw the sub-SPT. Default value 0.0001.

Value

The dimension of the ST will be returned if the original triangle is an acute triangle.

Author(s)

B. Wang <bwang@jaguar1.usouthal.edu>

References

Zhang, XM., Hitt, R. Wang, B. and Ding, J. (2008). Sierpinski Pedal Triangle. Fractals. 16(2): 141-150.

Examples

```
(abc = st(50,60))
plot(abc, iter=10)
```

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