Subject: Re: Fractal in IDL! Posted by d.poreh on Thu, 29 Oct 2009 09:39:14 GMT View Forum Message <> Reply to Message

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On 28 Okt., 19:15, sathya <sathya.s...@gmail.com> wrote:
> Hi,
>
> I am trying to create a fractal set in IDL. I know that a Mandelbrot
> set follows the below mentioned function, i.e.
>
> f(x) = x^2 - c
> where, x - is a complex number, c - constant
  and the range for x-axis is [-1.5, 1.5].
  In a similar way, can anyone gime me the function for anyother fractal
> or Koch snowflake. If I am not wrong, does it follow the given
> function?
 a = (1/2) + (i/SQRT(12))
> Thanks,
> Sathya!
Hi Sathya!
Could you please give us the code in IDL for first function (x^2-c).
and show how we could do that?
Cheers
```

Subject: Re: Fractal in IDL!
Posted by sathya on Thu, 29 Oct 2009 09:58:23 GMT
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```
On Oct 29, 5:39 am, Dav_Poreh <d.po...@gmail.com> wrote:

> On 28 Okt., 19:15, sathya <sathya.s...@gmail.com> wrote:

> 
> 
> Hi,

> 
> I am trying to create afractalset inIDL. I know that a Mandelbrot >> set follows the below mentioned function,i.e.

> 
> 
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```

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>> or Koch snowflake. If I am not wrong, does it follow the given
>> function?
>> a = (1/2) + (i/SQRT(12))
>> Thanks,
>> Sathya!
> Hi Sathya!
> Could you please give us the code inIDLfor first function (x^2-c).
> and show how we could do that?
> Cheers
Hi
here is the code!
pro frac,xRange,yRange,RESULT=res
;device,PSEUDO_COLOR=8,DECOMPOSED=0
if n_elements(xRange) eq 0 then xRange = [-1.0, 2.3]
if n_elements(yRange) eq 0 then yRange = [-1.3, 1.3]
iter = 255
xS = 640
yS = 512
xD = float(xRange[1]-xRange[0])
yD = float(yRange[1]-yRange[0])
xStep = xD / xS
yStep = yD / yS
xStartVec = lindgen(xS) * xStep + xRange[0]
yStartVec = lindgen( yS) * yStep + yRange[0]
constArr = complex( rebin( xStartVec, xS, yS),$
            rebin( transpose(yStartVec), xS, yS))
valArr = complexarr(xS, yS)
res = intarr(xS, yS)
```

```
oriIndex = lindgen( long(xS) * yS)

for i = 0, iter-1 do begin

valArr = valArr^2 - constArr

whereIn = where( abs( valArr) le 4.0d, COMPLEMENT=whereOut)

if whereIn[0] eq -1 then break

valArr = valArr[ whereIn]

constArr = constArr[ whereIn]

if whereOut[0] ne -1 then begin

res[ oriIndex[ whereOut]] = i+1

oriIndex = oriIndex[ whereIn]

endif
endfor

loadct,15

tv,res
end
```

here, is the code which uses the function I mentioned above!

```
Subject: Re: Fractal in IDL!
Posted by pgrigis on Thu, 29 Oct 2009 14:00:15 GMT
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```
On Oct 28, 11:15 pm, sathya <sathya.s...@gmail.com> wrote:
> Hi,
>
> I am trying to create a fractal set in IDL. I know that a Mandelbrot
> set follows the below mentioned function,i.e.
>
> f(x) = x^2 - c
>
> where, x - is a complex number, c - constant
> and the range for x-axis is [-1.5, 1.5].
>
> In a similar way, can anyone gime me the function for anyother fractal
> or Koch snowflake. If I am not wrong, does it follow the given
```

```
> function?
> 
> a =( 1/2 )+ ( i/SQRT(12) )

That doesn't make any sense.

To draw the snowflake, draw a triangle first.

Then on all sides "_____" of the triangle, replace the straight line by a line with a triangle that sticks out in the middle "__/\__".

Iterate ad infinitum.

Ciao,
Paolo

> Thanks,
> Sathya!
```

```
Subject: Re: Fractal in IDL!
Posted by pgrigis on Thu, 29 Oct 2009 14:01:14 GMT
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```
On Oct 29, 10:00 am, Paolo <pgri...@gmail.com> wrote:
> On Oct 28, 11:15 pm, sathya <sathya.s...@gmail.com> wrote:
>
>> Hi,
>> I am trying to create a fractal set in IDL. I know that a Mandelbrot
>> set follows the below mentioned function, i.e.
>> f(x) = x^2 - c
>> where, x - is a complex number, c - constant
>> and the range for x-axis is [-1.5, 1.5].
>
>> In a similar way, can anyone gime me the function for anyother fractal
>> or Koch snowflake. If I am not wrong, does it follow the given
>> function?
>> a = (1/2) + (i/SQRT(12))
>
 That doesn't make any sense.
>
> To draw the snowflake, draw a triangle first.
```

```
> Then on all sides "_____" of the triangle, replace the straight
> line by a line with a triangle that sticks out in the

Line break should be here: middle "__/\__".

> Iterate ad infinitum.
> Ciao,
> Paolo
> Thanks,
>> Sathya!
>
```

Subject: Re: Fractal in IDL!
Posted by rtk on Thu, 29 Oct 2009 18:32:38 GMT
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```
On Oct 28, 9:15 pm, sathya <sathya.s...@gmail.com> wrote:
> Hi.
>
> I am trying to create a fractal set in IDL. I know that a Mandelbrot
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>
> f(x) = x^2 - c
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> where, x - is a complex number, c - constant
> and the range for x-axis is [-1.5, 1.5].
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> In a similar way, can anyone gime me the function for anyother fractal
> or Koch snowflake. If I am not wrong, does it follow the given
> function?
> a = (1/2) + (i/SQRT(12))
> Thanks,
> Sathya!
```

Perhaps the easiest way to draw fractals of various kinds is to use the IFS ('Iterated Function System') approach. Email me if you want IDL code that can do that.

Also, the Sierpinski triangle is perhaps the simplest of all fractals

to generate. Here's BASIC code from the 80s to do it. I leave translation to IDL as an exercise for the reader:)

10 HOME:HGR2:HCOLOR=3: REM This just turns on the graphics and sets the color

20 X(1)=0:Y(1)=191:X(2)=140:Y(2)=0:X(3)=278:Y(3)=191: REM Triangle corners

30 X=X(1):Y=Y(1): REM A starting point

40 N = INT(3*RND(1))+1: X=INT(0.5*(X+X(N))): Y=INT(0.5*(Y+Y(N))): REM

The magic is here

50 HPLOT X,Y:GOTO 40: REM Plot the new point and continue

Have fun!

Ron