A test-example program for indirection operator and the paraSolids.scad import file is :
paraSolidExample.scad.

CODE:

```
include <paraSolids.scad>  ///// MUST BE <include>,  NOT <use> /////

///A test vector
test = [-1,.5,7,-4,0];

////Some passable functions
function @div72(x) = x/72;
function @square(x) = x*x;
function @xsq_ysq(x,y) = abs(y*y-x*x);
function @add(x,y)  = x+y;
function @sinTimes(a,b) = abs(sin(a)*b/5);
function @sinTimesR(r,a) = abs(r-abs(3*cos(a-1)));



echo([div72,square,add,sinTimes])
echo(map(square, test));
echo(map(div72, test));
echo(reduce(add, test));
echo(reduce(sinTimes,test));
echo(filter(div72,test));
echo("DONE WITH TESTS");

////2D examples Uncomment to see.+
//yIsFx(square,xseg=[-3,3],grid=30);
//rIsFa(div72, angle=330, ticks=30);

///3D

//zIsFxy(xsq_ysq, diag=([[1.5,3],[-1.5,-1.5]]), gridx = 20, gridy =
20);
//zIsFxy(add, diag=([[0,2],[3,0]]));
//rIsFza(sinTimes, zseg=[0,5], ticks=30, grid=30);
//zIsFarIsFa(div72,fra=sinTimesR,ticks=40,grid=20);

mandelMax = 150;
```
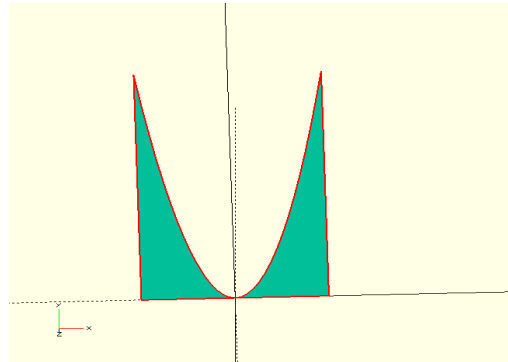
```
function mandel(cons,maxcount=mandelMax,z=[0,0]) =
    maxcount==0 ? mandelMax-maxcount
              :(norm(z)> 2 ? mandelMax-maxcount
                          : mandel(cons,
                                  maxcount-1,
                                  [z[0]*z[0]-
z[1]*z[1],z[0]*z[1]*2]+cons
                                  )
              );
function @testMandel(x,y) = log(mandel([x,y]))/3;
//zIsFxy(testMandel,diag=[[-2,2],[2,-2]],gridx=100, gridy=100);
```
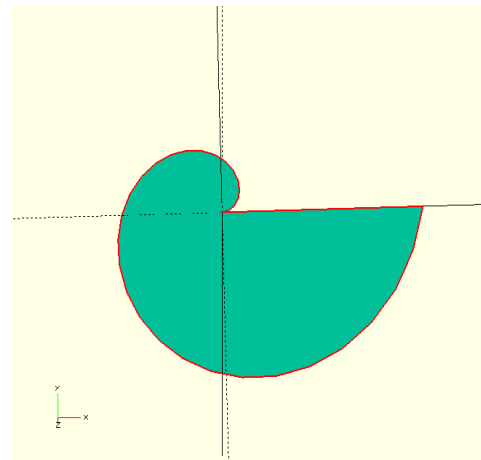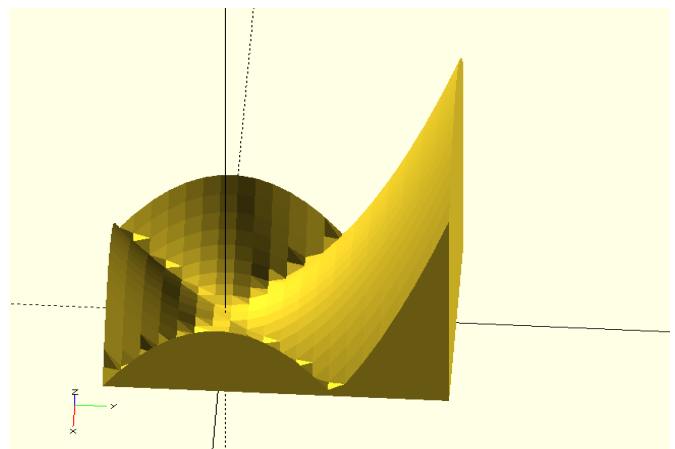
Removing comments in order:
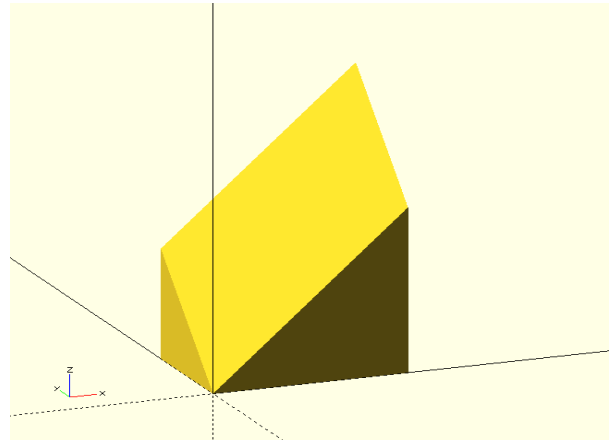
2D examples:

```
yIsFx(square,xseg=[-3,3],grid=30);
```
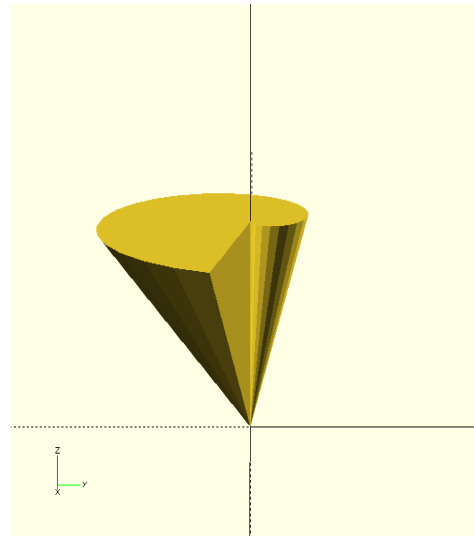


```
rIsFa(div72, angle=330, ticks=30);
```



```
zIsFxy(xsq_ysq, diag=([[1.5,3],[-1.5,-1.5]]),gridx = 20,gridy = 20);
```
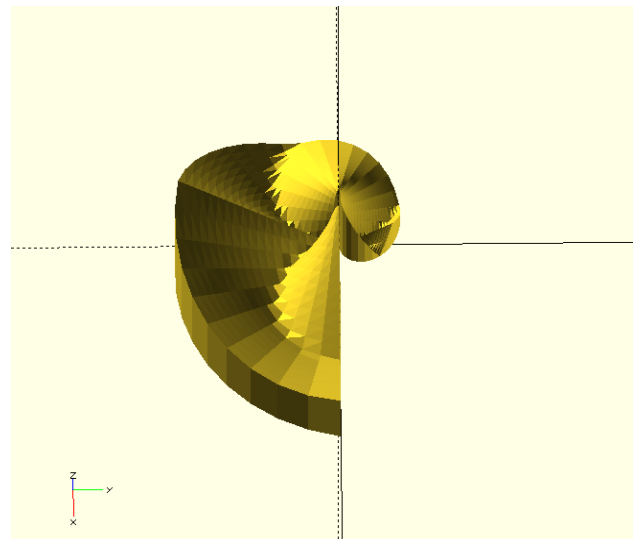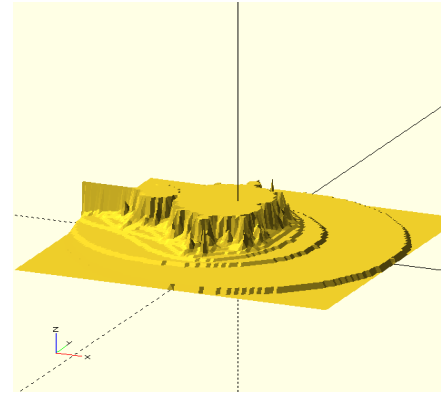
zIsFxy(add, diag=([[0,2],[3,0]]));

rIsFza(sinTimes, zseg=[0,5], ticks=30, grid=30);

zIsFarIsFa(div72,fra=sinTimesR,ticks=40,grid=20);

```
zIsFxy(testMandel,diag=[[-2,2],[2,-2]],gridx=100, gridy=100);
```

All files needed to alter OpenScad to handle function indirection and run these examples is available at:

https://github.com/ottojas/openscad-affine

FILES FOR ANY VERSION OF OPENSCAD:

`affine.scad`   contains affine transforms and utility functions.
`affineExample.scad` contains examp[les and test code.

FILES FOR VERSION WITH FUNCTION INDIRECTION.

`paraSolids.scad` contains functional language constructs reduce and map. Also contains a number of modules to generate shapes parametricly by passing functions.
`paraSolidExample.scad` contains examples to illustrate and test the code in paraSolids.scad and changes to the openscad program.

THE FOLDER `ojasSources` contains the five files that have been added to to obtain the functional indirection capabilities. The code that has been altered is marked with "////OS". There are about 30 lines total.

All of these files overwrite files in the src directory.

This file is `ParaSolidExamples.pdf` in the repository.