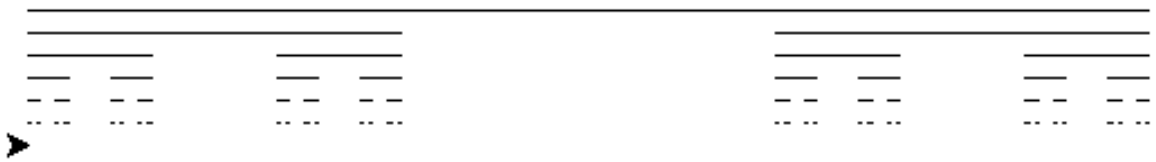
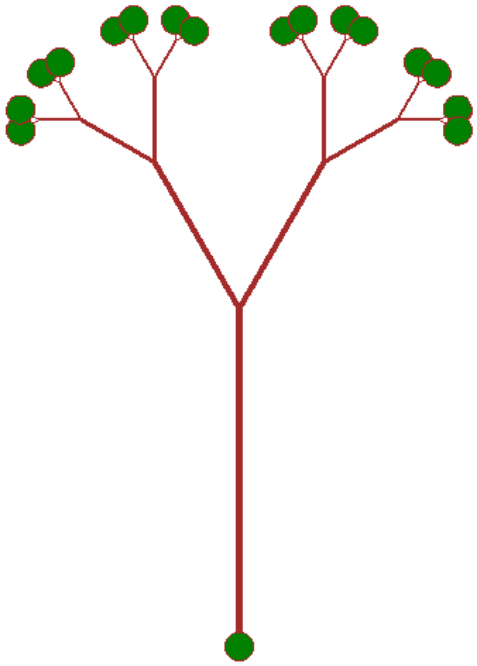
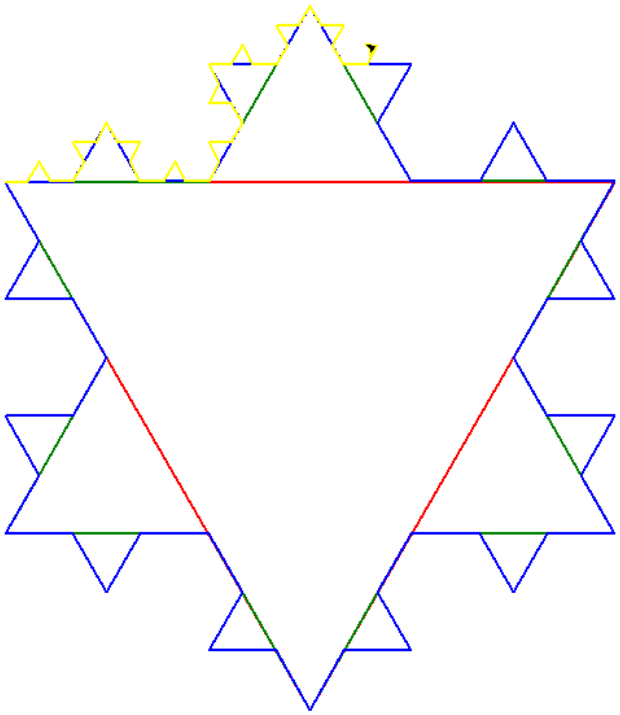


```
from turtle import *
def cantor(bok, n):
    if n==0:
        fd(bok);return
    cantor(bok/3, n- 1)
    pu(); fd(bok/3);pd()
    cantor(bok/3, n- 1)

def rysujCantora(szerokosc, stopien):
    pu();bk(szerokosc//2);pd()
    for i in range (stopien):
        cantor(szerokosc, i)
        pu();bk(szerokosc);
        lt(90);bk(10);rt(90);pd()


speed(0);rysujCantora(500, 6)
```

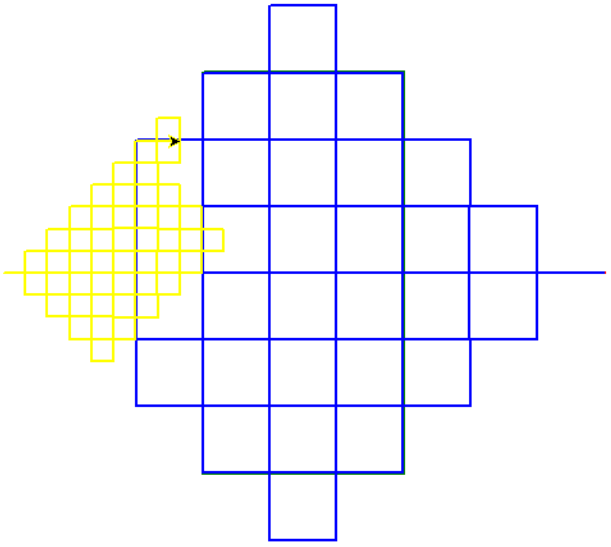
```
from turtle import *


def drzewo (stopień, wielkość):
    if stopień==0:
        stamp()
        return
    width (1*stopień)
    fd(wielkość); lt(30)
    drzewo(stopień-1,wielkość/2)
    rt(60)
    drzewo(stopień-1,wielkość/2)
    lt(30); bk(wielkość)


def RysujDrzewo(stopień):
    pu(); home(); seth(90); bk(240); pd()
    pencolor('brown'); shape('circle');
    fillcolor('green')
    drzewo(stopień, 240)


RysujDrzewo(5)
```



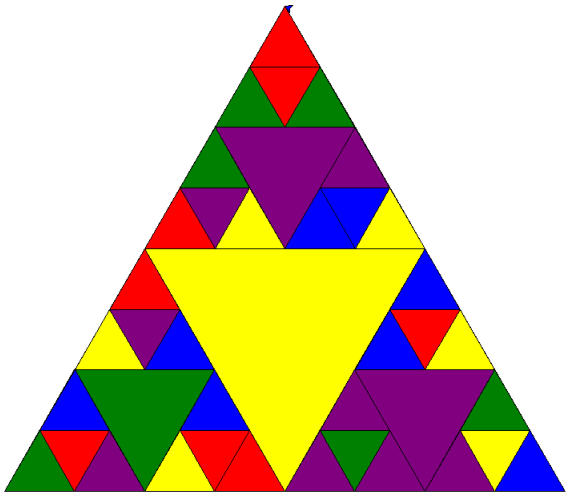
```
from turtle import *
a=["red", "green", "blue", "yellow", "purple", "pink"]
pensize(2)
def koch(bok, n):
    if n==0:
        fd(bok);return
    koch(bok/3, n - 1)
    lt(60)
    koch(bok/3, n - 1)
    rt(120)
    koch(bok/3, n - 1)
    lt(60)
    koch(bok/3, n - 1)

def s_kocha(bok,n):
    if n == -1:
        return
    for i in range(3):
        koch(bok,n);rt(120)


def rys_s_kocha(trasa,ile):
    for i in range(ile):
        pencolor(a[i])
        begin_fill()
        pu();goto(-trasa/2,trasa/4);pd()
        s_kocha (trasa,i)
        #end_fill()

rys_s_kocha(470,5)
```



```
from random import *
from turtle import *

a=["red", "green", "blue", "yellow", "purple","pink"]
pensize(2)
def peano(n, bok):
    if n==0:
        fd(bok);return
    peano(n- 1, bok//3)
    lt(90)
    for i in range(3):
        peano(n- 1, bok/3)
        rt(90)
    for i in range(3):
        peano(n- 1, bok/3)
        lt(90)
    peano(n- 1, bok/3)
    rt(90)
    peano(n- 1, bok/3)

def rysPeano(ile, trasa):
    for i in range(ile):
        pencolor(a[i])
        begin_fill()
        pu();goto(-trasa/2,0);pd()
        peano (i, trasa)
        #end_fill()

rysPeano(5, 470)
```



```
from turtle import *
from random import *

def sierp(bok, n):
    a=["red", "green", "blue", "yellow", "purple"]
    if n==0:
        shuffle(a)
        fillcolor(a[0])
        begin_fill()
        for i in range(3):
            fd (bok);lt (120)
        end_fill()
        return
    for i in range(3):
        sierp(bok/2, n - 1);fd(bok);lt(120)

def rysuj_sierp(bok, n):
   pu();goto(-bok/2, -2*bok/5) ;pd()
   for i in range(n):
       sierp(bok, i)

rysuj_sierp(700, 4)
```



```
from turtle import *


def kwadrat(bok):
    for i in range(4):
        fd(bok);lt(90)



def dywanSierpinskiego(n, bok):
    if n == 0:
        fillcolor("yellow")
        begin_fill()
        kwadrat(bok);
        end_fill();return
    fillcolor("red")
    begin_fill()
    for i in range(4):
        for j in range(2):
            dywanSierpinskiego(n - 1, bok / 3);fd(bok / 3)
        fd(bok / 3);lt(90)
    end_fill()



for i in range(3):
    pu(); goto(-243, -243);pd();dywanSierpinskiego( i , 486)
```