Лабораторная работа 1

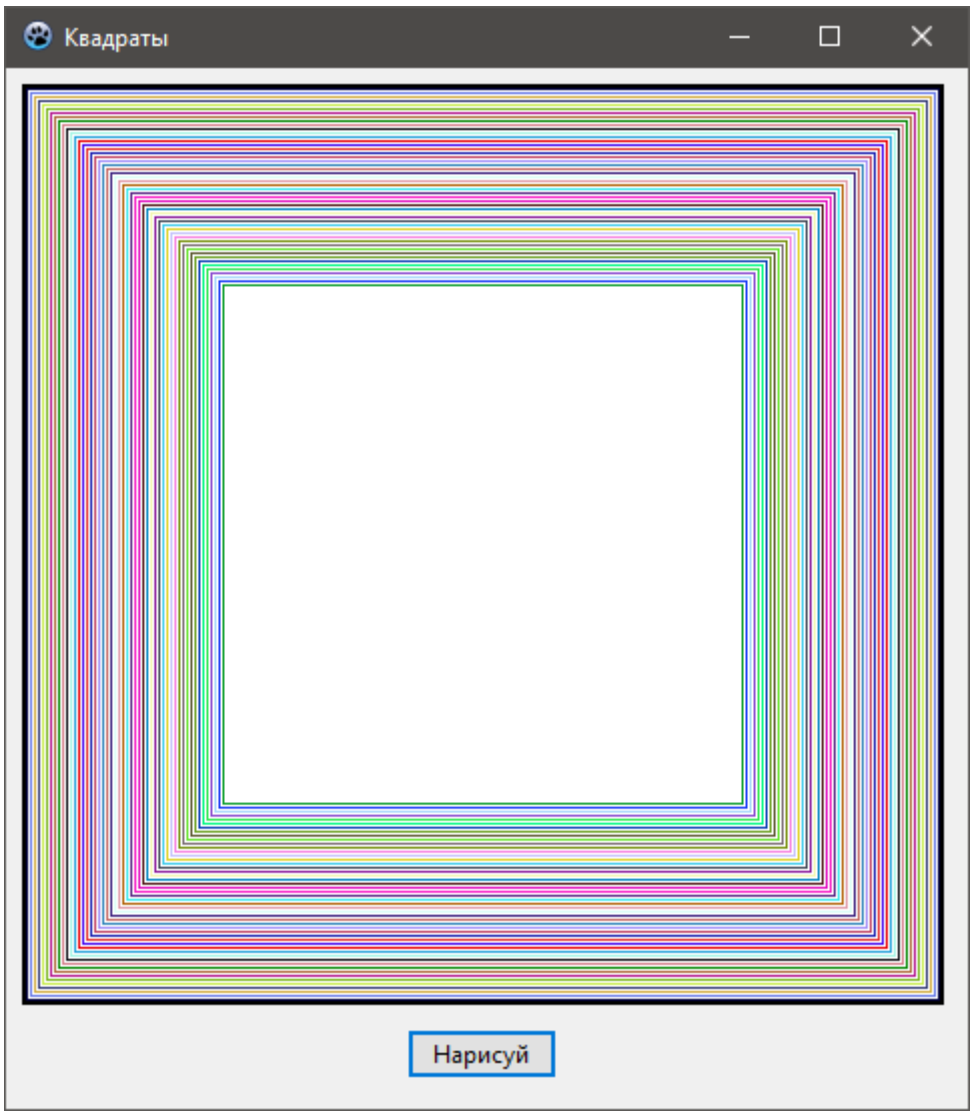
Графические построения с использованием координатного метода

Задача 1

Код программы:

```
procedure TForm1.Button1Click(Sender: TObject);
var x1,x2,y1,y2,i: integer;
begin
  x1:=0;
  y1:=0;
  x2:=Image1.Width;
  y2:=Image1.Height;
  with Image1.Canvas do begin
    for i:=1 to 50 do
    begin
      x1:=x1+2;
      x2:=x2-2;
      y1:=y1+2;
      y2:=y2-2;
      Pen.Color:=RGBToColor(random(255),random(255),random(255));
      MoveTo(x1,y1);
      Rectangle(x1,y1,x2,y2);
    end;
  end;
end;
```

Результат:



Задача 2

Код программы:

```
procedure TForm1.Button1Click(Sender: TObject);
var h,w,x1,x2,x3,x4,y1,y2,y3,y4,r,cx,cy,dx1,dx2,dy1,dy2: integer;
  a,b,p,p1,p2,angle: real;
  colour: TColor;
begin
  w:=Image1.Width;
  h:=Image1.Height;

  with Image1.Canvas do begin
  Pen.Color:=clwhite;
  Rectangle(0,0,w,h);

  a:=2*pi/14;
```

```
r:=round(w/4+w/8);
cx:=round(w/2);
cy:=round(h/2);
x2:=cx+r;
y2:=cy;
b:=a;
while b<=2*pi do
begin
  x1:=x2;
  y1:=y2;
  x2:=round(cx+r*cos(b));
  y2:=round(cy+r*sin(b));
  colour:=RGBToColor(random(255),random(255),random(255));
  if colour=clwhite then
     colour:=clmaroon;
  Pen.Color:=colour;
  MoveTo(x1,y1);
  LineTo(x2,y2);
  p1:=y1-y2;
  p2:=x1-x2;
  if p2=0 then
     p:=pi/2
  else p:=p1/p2;
  angle:=pi/3-ArcTan(abs(p));
  dx1:=round(15*sin(angle));
  dy1:=round(15*cos(Angle));
  angle:=angle+pi/3;
  dx2:=round(15*sin(angle));
  dy2:=round(15*cos(angle));
  if p1<0 then
     begin
       if p2<0 then
          begin
          x3:=x1+dx1;
          y3:=y1+dy1;
          x4:=x1+dx2;
          y4:=y1+dy2;
          end
       else begin
          x3:=x1-dx1;
          y3:=y1+dy1;
          x4:=x1-dx2;
```

```
            y4:=y1+dy2;
            end
        end
    else begin
        if p2<0 then
            begin
            x3:=x1+dx1;
            y3:=y1-dy1;
            x4:=x1+dx2;
            y4:=y1-dy2;
            end
        else begin
            x3:=x1-dx1;
            y3:=y1-dy1;
            x4:=x1-dx2;
            y4:=y1-dy2;
            end
        end;
    MoveTo(x1,y1);
    LineTo(x3,y3);
    MoveTo(x1,y1);
    LineTo(x4,y4);
    b:=b+a;
  end;
  end;
```

Результат: