#include <iostream>

#include <cmath>

#include <iomanip>

#include <fstream>

#define SQR(x) ((x) \* (x))

using namespace std;

const int Nx = 100;

const int Ny = 200;

const double pi = 3.141592653589793;

const double hx = 1.0/Nx;

const double hy = 1.0/Ny;

int main()

{

 double g[Nx+1][Ny+1];

 double f[Nx+1];

 int i, j;

 /// g(x,y)=sqrt(1-(x-0.5)^2-(y-0.5)^2)

 for(i = 0; i <= Nx; i++)

 {

 f[i]= sin(2.0\*pi\*i\*hx);

 for(j = 0; j <= Ny; j++)

 {

 g[i][j] = sqrt (1.0 - SQR(i\*hx-0.5) - SQR (j\*hy-0.5)) ;

 }

 }

 ofstream gout("g(x,y).txt");

 for(i = 0; i <= Nx; i++)

 {

 for (j = 0; j <= Ny; j++)

 {

 gout << i\*hx << "\t" << j\*hy << "\t" << g[i][j]<< endl;

 }

 }

 gout.close();

 ofstream fout("f(x).txt");

 for(i = 0; i <= Nx; i++)

 {

 fout << i\*hx << "\t" << f[i]<< endl;

 }

 fout.close();

 return 0;

}