Zadanie 10

Krzysztof Kozubek(c++)

Kod programu:

#include<iostream>

#include<cstdlib>

#include<cmath>

using namespace std;

const double eps = 1e-17;

static double functionValue(double x0, double y0){

return pow((2 - x0), 2) + 50 \* pow((y0 - pow(x0, 2)), 2);

}

static double functionXDerivativeValue(double x0, double y0){

return 2 \* (100 \* pow(x0, 3) + x0\*(1 - 100 \* y0) - 2);

}

static double functionYDerivativeValue(double x0, double y0){

return 100 \* (y0 - pow(x0, 2));

}

bool showWynik(double x0, double y0){

double step = 0.25, valF, valSF, valDX, valDY, x, y;

int it = 0;

while (1){

valDX = functionXDerivativeValue(x0, y0);

valDY = functionYDerivativeValue(x0, y0);

x = x0 - (valDX\*step);

y = y0 - (valDY\*step);

valSF = functionValue(x, y);

if (valSF<valF){

if (abs(valSF - valF)<eps){

cout << endl << "Wynik po " << it << " iteracjach:\nX : " << x << ", Y : " << y << endl;

return true;

}

else{

x0 = x;

y0 = y;

valF = valSF;

}

}

else

step /= 2;

it++;

}

}

void znajdzMin(double x0, double y0){

double step = 0.25, valF, valSF, valDX, valDY, x, y;

int it = 0;

valF = functionValue(x0, y0);

showWynik(x0, y0);

}

int main(){

double x, y;

cout << "Podaj X: ";

cin >> x;

cout << "Podaj Y: ";

cin >> y;

znajdzMin(x, y);

system("pause");

return 0;

}

**Wynik po 128956 iteracjach:**

**X : 2, Y : 4**