Переделать это в Python3

1)

# Результат работы программы.



Листинг.

#include <iostream> #include <cmath> using namespace std;

const int N = 100; double F(double x)

{

return sqrt(x);

}

double\* Gauss(double A[][N], double B[])

{

int i, j, k; double X[N], t, s;

for (k = 0; k < N - 1; k++)

{

for (i = k + 1; i < N; i++)

{

t = A[i][k] / A[k][k];

B[i] = B[i] - t \* B[k];

for (j = 0; j < N; j++) A[i][j] = A[i][j] - t \* A[k][j];

}

}

for (k = N - 1; k >= 0; k--)

{

s = 0;

for (j = k + 1; j < N; j++) s += A[k][j] \* X[j];

X[k] = (B[k] - s) / A[k][k];

}

return X;

}

double Mult(int i, double X[], double Y[])

{

if (!i) return (Y[1] - Y[0]) / (X[1] - X[0]);

else

2]);

}

if (i == N - 1) return (Y[N - 1] - Y[N - 2]) / (X[N - 1] - X[N -

else return (Y[i + 1] - Y[i - 1]) / (X[i + 1] - X[i - 1]);

double\* Mit(double X[], double Y[])

{

int i, j;

double A[N][N], B[N], h; for (i = 0; i < N; i++)

{

for (j = 0; j < N; j++) A[i][j] = 0;

if (!i or i == N - 1) A[i][i] = 1; else

{

A[i][i - 1] = 1;

A[i][i] = 4;

A[i][i + 1] = 1;

h = X[i] - X[i - 1];

if (i and i != N - 1) B[i] = 3 \* (Y[i + 1] - Y[i - 1]) / h;

}

if (!i) B[i] = Mult(0, X, Y);

else if (i == N - 1) B[i] = Mult(N - 1, X, Y);

}

return Gauss(A, B);

}

double Spline(double x, double X[], double Y[])

{

int i;

double\* M, d1, d2, d3, d4, s; M = Mit(X, Y);

for (i = 1; i < N; i++)

if (X[i - 1] <= x and x <= X[i])

{

pow(s, 3);

/ pow(s, 3);

2);

d4;

s = X[i] - X[i - 1];

d1 = (x - X[i]) \* (x - X[i]) \* (2 \* (x - X[i - 1]) + s) /

d2 = (x - X[i - 1]) \* (x - X[i - 1]) \* (2 \* (X[i] - x) + s)

d3 = (x - X[i]) \* (x - X[i]) \* (x - X[i - 1]) / pow(s, 2);

d4 = (x - X[i - 1]) \* (x - X[i - 1]) \* (x - X[i]) / pow(s, return Y[i - 1] \* d1 + Y[i] \* d2 + M[i - 1] \* d3 + M[i] \*

}

}

int main()

{

setlocale(LC\_ALL, "Russian"); double X[N], Y[N], x;

for (int i = 0; i < N; i++)

{

X[i] = i; Y[i] = F(i);

}

do

{

cout << "Введите точку: "; cin >> x;

if (x < X[0] or x > X[N - 1]) cout << "Точка лежит вне границ

сетки!" << endl << endl;

} while (x < X[0] or x > X[N - 1]);

cout << endl << "Значение функции в точке " << x << ":" << endl << endl

<< " Интерполяция кубическими сплайнами: " << Spline(x, X, Y) << endl << "

Обычное вычисление: " << F(x) << endl;

}

# 2) . Скриншот работы программы



Листинг

#include <iostream>

#include <cmath>

using namespace std;

double F(double x, double y) {

return pow(x, 2) - 3 \* y;

}

int main() {

double a = 0, b = 1, h = 0.1;

double n = (b - a) / h;

double\* X = new double[n];

double\* Y1 = new double[n];

double\* Y = new double[n];

double\* f = new double[n];

double\* hf = new double[n];

X[0] = a;

Y[0] = 1;

Y1[0] = 0;

f[0] = F(X[0], Y[0]);

for (int i = 1; i <= n; i++) {

 X[i] = a + i \* h;

Y1[i] = Y[i - 1] + h \* F(X[i - 1], Y[i - 1]);

Y[i] = Y[i - 1] + h \* (F(X[i - 1], Y[i - 1]) + F(X[i], Y1[i])) / 2.0;

f[i] = F(X[i], Y[i]);

}

for (int i = 0; i <= n; i++) {

cout << " " << i << "\tx[" << i << "] = " << X[i] << "\t\ty\*[" << i << "] = " << floor(Y1[i] \* 10000) / 10000 << "\t\t\ty[" << i << "] = " << floor(Y[i] \* 10000) / 10000 << "\t\t\tf(x[" << i << "]y[" << i << "]) = " << floor(f[i] \* 10000) / 10000 << endl;

}

return 0;

}