**задание**: подставить эти числа из таблицы в готовую программу ниже.
и вывести график аппроксимации линейной функции и Графики аппроксимации полиномиальной функции.(примеры ниже)
все числа уже поставлены в код программы. но выдает ошибку using System.Windows.Forms.DataVisualization.Charting; (пропущена ссылка на сборку)



**готовая программа.
Листинг пpогpаммы линейной функции**

using System;

using System.Collections.Generic;

using System.ComponentModel;

using System.Data;

using System.Drawing;

using System.Linq;

using System.Text;

using System.Threading.Tasks;

using System.Windows.Forms;

using System.Windows.Forms.DataVisualization.Charting;

namespace Approk

{

public partial class Form1 : Form

{ // известны x и y. Найти a и b.

public Form1()

{

InitializeComponent();

Series s1 = new Series("Основной график");

Series s2 = new Series("Аппроксимация");

s1.ChartType = SeriesChartType.Spline;

s2.ChartType = SeriesChartType.Spline;

s2.Color = Color.Green;

s1.Color = Color.Red;

chart1.Series.Clear();

chart1.Series.Add(s1);

chart1.Series.Add(s2);

}

private const int MAX\_POINTS = 20;

private double[] x = { 0.2, 0.5, 0.6, 0.9, 1.0, 1.2, 1.4, 1.6, 1.7, 1.9, 2.1, 2.4, 2.6, 2.7, 3.0, 3.2, 3.4, 3.6, 3.8, 4.0, 5.0 };

private double[] y = { 2.7, 0.9, 0.8, 0.4, 0.2, 0.4, 0.3, 0.3, 0.2, 0.3, 0.2, 0.3, 0.2, 0.2, 0.2, 0.4, 0.2, 0.1, 0.3, 0.2 };

private double[] yAprox = new double[20];

private void Form1\_Load(object sender, EventArgs e)

{

for (int i = 0; i < MAX\_POINTS; i++)

listBox1.Items.Add("x: " + x[i] + "; y: " + y[i]);

PainGraf();

}

private void button1\_Click(object sender, EventArgs e)

{

double sumX = 0;

double sumX2 = 0;

double sumY = 0;

double sumXY = 0;

for (int i = 0; i < MAX\_POINTS; i++)

{

sumX += x[i];

sumY += y[i];

sumX2 += Math.Pow(x[i], 2);

sumXY += x[i] \* y[i];

}

double a = (MAX\_POINTS \* sumXY - (sumX \* sumY)) / (MAX\_POINTS \* sumX2 - sumX \* sumX);

double b = (sumY - a \* sumX) / MAX\_POINTS;

for (int i = 0; i < MAX\_POINTS; i++)

{

yAprox[i] = a \* x[i] + b;

}

listBox1.Items.Clear();

for (int i = 0; i < MAX\_POINTS; i++)

listBox1.Items.Add("x: " + x[i] + "; y: " + y[i]);

listBox1.Items.Add("Коэффициент a = " + a);

listBox1.Items.Add("Коэффициент b = " + b);

chart1.Series[1].Points.Clear();

for (int i = 0; i < MAX\_POINTS; i++)

{

chart1.Series[1].Points.Add(new DataPoint(x[i], yAprox[i]));

}

}

private void PainGraf()

{

chart1.Series[0].Points.Clear();

for (int i = 0; i < MAX\_POINTS; i++)

{

chart1.Series[0].Points.Add(new DataPoint(x[i], y[i]));

}

}

}

}

**ПPИЛОЖЕНИЕ В.**

**Листинг пpогpаммы полиномиальной функции**

using System;

using System.Collections.Generic;

using System.ComponentModel;

using System.Data;

using System.Drawing;

using System.Linq;

using System.Text;

using System.Threading.Tasks;

using System.Windows.Forms;

using System.Windows.Forms.DataVisualization.Charting;

namespace Approk

{

public partial class Form1 : Form

{ // известны x и y. Найти a и b.

public Form1()

{

InitializeComponent();

Series s1 = new Series("Основной график");

Series s2 = new Series("Аппроксимация");

s1.ChartType = SeriesChartType.Spline;

s2.ChartType = SeriesChartType.Spline;

s2.Color = Color.Green;

s1.Color = Color.Red;

chart1.Series.Clear();

chart1.Series.Add(s1);

chart1.Series.Add(s2);

}

private const int MAX\_POINTS = 20;

private double[] x = { 0.2, 0.5, 0.6, 0.9, 1.0, 1.2, 1.4, 1.6, 1.7, 1.9, 2.1, 2.4, 2.6, 2.7, 3.0, 3.2, 3.4, 3.6, 3.8, 4.0, 5.0 };

private double[] y = { 2.7, 0.9, 0.8, 0.4, 0.2, 0.4, 0.3, 0.3, 0.2, 0.3, 0.2, 0.3, 0.2, 0.2, 0.2, 0.4, 0.2, 0.1, 0.3, 0.2 };

private double[] yAprox = new double[20];

private void Form1\_Load(object sender, EventArgs e)

{

for (int i = 0; i < MAX\_POINTS; i++)

listBox1.Items.Add("x: " + x[i] + "; y: " + y[i]);

PainGraf();

}

private void button1\_Click(object sender, EventArgs e)

{

double sumX = 0;

double sumX2 = 0;

double sumY = 0;

double sumXY = 0;

listBox1.Items.Clear();

for (int i = 0; i < MAX\_POINTS; i++)

listBox1.Items.Add("x: " + x[i] + "; y: " + y[i]);

double[] T = new double[MAX\_POINTS \* 2];

double[] C = new double[MAX\_POINTS];

double[] A = new double[MAX\_POINTS];

double[,] B = new double[MAX\_POINTS, MAX\_POINTS + 1];

for (int i = 0; i < MAX\_POINTS \* 2; i++)

{

T[i] = 0;

if (i < MAX\_POINTS) C[i] = 0;

}

for (int i = 0; i < MAX\_POINTS; i++)

{

for (int j = 1; j <= 4; j++) T[j] += Math.Exp(j \* Math.Log(x[i]));

for (int j = 0; j <= 2; j++) C[j] += y[i] \* Math.Exp(j \* Math.Log(x[i]));

}

T[0] = MAX\_POINTS;

for (int i = 0; i <= 2; i++)

for (int j = 0; j <= 2; j++)

B[i, j] = T[j + i];

double Bik = 0;

for (int i = 0; i <= 2; i++)

B[i, 3] = C[i];

for (int k = 0; k <= 1; k++)

{

for (int i = k; i <= 2; i++)

{

Bik = B[i, k];

for (int j = k; j <= 3; j++)

{

if (i == k) B[i, j] = B[i, j] / Bik;

else B[i, j] = B[i, j] / Bik - B[k, j];

}

}

}

for (int i = 2; i != -1; i--)

{

double sum = B[i, 3] - B[i, 0] \* A[0] - B[i, 1] \* A[1] - B[i, 2] \* A[2] - B[i, 3] \* A[3] - B[i, 4] \* A[4] - B[i, 5] \* A[5] - B[i, 6] \* A[6] - B[i, 7] \* A[7];

double Bz = B[i, i];

A[i] = sum / Bz;

}

for (int i = 0; i < MAX\_POINTS; i++)

{

yAprox[i] = A[2] \* Math.Pow(x[i], 2) + A[1] \* x[i] + A[0];

}

listBox1.Items.Add("Коэффициент a1 = " + A[0]);

listBox1.Items.Add("Коэффициент a2 = " + A[1]);

listBox1.Items.Add("Коэффициент a3 = " + A[2]);

chart1.Series[1].Points.Clear();

{

chart1.Series[1].Points.Add(new DataPoint(x[i], yAprox[i]));

}

}

private void PainGraf()

{

chart1.Series[0].Points.Clear();

for (int i = 0; i < MAX\_POINTS; i++)

{

chart1.Series[0].Points.Add(new DataPoint(x[i], y[i]));

}

}

}

}



