**Вариант** 8

Задание:

Напечатать таблицу значений функции    
заданной на отрезке [ 0; 200 ] c шагом h=0,1

Код программы:

Изм.

Лист

№ докум.

Подпись

Дата

Лист

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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.Drawing.Drawing2D;

namespace Program9

{

public partial class Form1 : Form

{

Graphics Graph1;

Double x, y, ox, oy;

Pen Pen1 = new Pen(Color.Red, 1);

Pen Pen2 = new Pen(Color.Black, 2);

Pen Pen3 = new Pen(Color.Cyan, 3);

Pen Pen4 = new Pen(Color.Brown, 2);

Pen Pen5 = new Pen(Color.Fuchsia, 2);

Font drawFont = new Font("Arial", 12);

SolidBrush Brush1 = new SolidBrush(Color.Black);

public Form1()

{

InitializeComponent();

}

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

{

Graph1 = pictureBox1.CreateGraphics();

int i = 0;

Graph1.Clear(Color.White);

for (i = -250; i <= 250; i += 50)

Graph1.DrawString(Convert.ToString(i), drawFont, Brush1, i + 250, 210);

for (i = -200; i <= 200; i += 50)

Graph1.DrawString(Convert.ToString(i), drawFont, Brush1, 260, 200 - i);

Graph1.ScaleTransform(1, -1);

Graph1.TranslateTransform(250, -200);

Graph1.DrawLine(Pen1, -250, 0, 250, 0);

Graph1.DrawLine(Pen1, 0, -200, 0, 200);

for (i = -250; i <= 250; i += 50)

Graph1.DrawEllipse(Pen3, i, 0, 1, 1);

for (i = -200; i <= 200; i += 50)

Graph1.DrawEllipse(Pen3, 0, i, 1, 1);

Graph1.Dispose();

}

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

Изм.

Лист

№ докум.

Подпись

Дата

Лист

{

pictureBoxCos.Visible = true;

pictureBoxSin.Visible = false;

pictureBoxTg.Visible = false;

pictureBoxArcsin.Visible = false;

pictureBoxExp.Visible = false;

pictureBoxF.Visible = false;

Graphics Graph1 = pictureBox1.CreateGraphics();

Graph1.ScaleTransform(1, -1);

Graph1.TranslateTransform(250, -200);

ox = Convert.ToDouble(numericUpDown1.Value);

oy = Convert.ToDouble(numericUpDown2.Value);

x = -250;

while (x <= 250)

{

y = oy \* Math.Cos(x / ox);

Graph1.DrawRectangle(Pen1, (Int32)x, (Int32)y, 1, 1);

x = x + 0.01;

}

}

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

{

pictureBoxCos.Visible = false;

pictureBoxSin.Visible = true;

pictureBoxTg.Visible = false;

pictureBoxArcsin.Visible = false;

pictureBoxExp.Visible = false;

pictureBoxF.Visible = false;

ox = Convert.ToDouble(numericUpDown1.Value);

oy = Convert.ToDouble(numericUpDown2.Value);

Graphics Graph1 = pictureBox1.CreateGraphics();

Graph1.ScaleTransform(1, -1);

Graph1.TranslateTransform(250, -200);

x = -250;

while (x <= 250)

{

y = oy \* Math.Sin(x / ox);

Graph1.DrawEllipse(Pen2, (Int32)x, (Int32)y, 1, 1);

x = x + 0.01;

}

}

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

{

pictureBoxCos.Visible = false;

pictureBoxSin.Visible = false;

pictureBoxTg.Visible = true;

pictureBoxArcsin.Visible = false;

pictureBoxExp.Visible = false;

pictureBoxF.Visible = false;

Graphics Graph1 = pictureBox1.CreateGraphics();

Graph1.ScaleTransform(1, -1);

Graph1.TranslateTransform(250, -200);

ox = Convert.ToDouble(numericUpDown1.Value);

oy = Convert.ToDouble(numericUpDown2.Value);

x = -250;

while (x <= 250)

{

y = oy \* Math.Tan(x / ox);

Graph1.DrawEllipse(Pen3, (Int32)x, (Int32)y, 1, 1);

x = x + 0.01;

}

Изм.

Лист

№ докум.

Подпись

Дата

Лист

}

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

{

pictureBoxCos.Visible = false;

pictureBoxSin.Visible = false;

pictureBoxTg.Visible = false;

pictureBoxArcsin.Visible = true;

pictureBoxExp.Visible = false;

pictureBoxF.Visible = false;

colorDialog1.ShowDialog();

Pen2.Color = colorDialog1.Color;

ox = Convert.ToDouble(numericUpDown1.Value);

oy = Convert.ToDouble(numericUpDown2.Value);

Graphics Graph1 = pictureBox1.CreateGraphics();

Graph1.ScaleTransform(1, -1);

Graph1.TranslateTransform(250, -200);

x = -1;

while (x <= 1)

{

y = oy \* Math.Asin(x / ox);

Graph1.DrawEllipse(Pen2, (float)x, (float)y, 1, 1);

x = x + 0.01;

}

}

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

{

pictureBoxCos.Visible = false;

pictureBoxSin.Visible = false;

pictureBoxTg.Visible = false;

pictureBoxArcsin.Visible = false;

pictureBoxExp.Visible = true;

pictureBoxF.Visible = false;

colorDialog1.ShowDialog();

Pen2.Color = colorDialog1.Color;

ox = Convert.ToDouble(numericUpDown1.Value);

oy = Convert.ToDouble(numericUpDown2.Value);

Graphics Graph1 = pictureBox1.CreateGraphics();

Graph1.ScaleTransform(1,-1);

Graph1.TranslateTransform(250, -200);

x = -250;

while (x <= 100)

{

y = Math.Exp(x / ox);

Graph1.DrawEllipse(Pen2, (float)x, (float)y, 1, 1);

x = x + 0.01;

}

}

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

{

pictureBoxCos.Visible = false;

pictureBoxSin.Visible = false;

pictureBoxTg.Visible = false;

pictureBoxArcsin.Visible = false;

pictureBoxExp.Visible = false;

pictureBoxF.Visible = true;

colorDialog1.ShowDialog();

Pen2.Color = colorDialog1.Color;

ox = Convert.ToDouble(numericUpDown1.Value);

oy = Convert.ToDouble(numericUpDown2.Value);

Graphics Graph1 = pictureBox1.CreateGraphics();

Graph1.ScaleTransform(1, -1);

Graph1.TranslateTransform(250, -200);

x = -250;

while (x <= 250)

{

y = 700.0 / 33.0 \* Math.Sqrt((4 \* Math.Pow(Math.Cos(x), 2)) + (4 \* Math.Cos(x)) + 8);

Graph1.DrawEllipse(Pen2, (float)x, (float)y, 1, 1);

x = x + 0.1;

}

}

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

{

for (x = -25; x <= 25; x += 0.02)

{

y = 700.0 / 33.0 \* Math.Sqrt((4 \* Math.Pow(Math.Cos(x), 2)) + (4 \* Math.Cos(x)) + 8);

chart1.Series[0].Points.AddXY(x, y);

}

}

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

{

Close();

}

}

}

Выполнение программы:

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№ докум.

Подпись

Дата

Лист

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| --- | --- | --- | --- |
| Система координат | |  | |
| Cos(x) | |  | |
| Sin(x) | |  | |
| Tg(x)  Изм.  Лист  № докум.  Подпись  Дата  Лист | |  | |
| ArcSin(x) | |  | |
| Exp(x)  Изм.  Лист  № докум.  Подпись  Дата  Лист | |  | |
|  | |  | |
| График функции в Chart | |  | |

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Лист

№ докум.

Подпись

Дата

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Вывод: Оно работает…