Лабораторная работа1

Уровень 1

№1

using System;

class Program

{

static void Main( )

{

int s = 0;

for(int i = 2; i <= 35; i += 3)

{

s += i;

}

Console.WriteLine(s);

}

}

№2

using System;

class Program

{

static void Main()

{

double s = 0;

for (double i = 1; i <= 10; i++)

{

s += 1/ i;

}

Console.WriteLine(s);

}

}

№3

using System;

class Program

{

static void Main()

{

double s = 0;

for (double i = 2; i <= 112; i += 2)

{

s += i / (i + 1);

}

Console.WriteLine(s);

}

}

№4

using System;

class Program

{

public static double pow(double x, int n)

{

double p = 1;

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

{

p = p \* x;

}

return p;

}

static void Main()

{

double x = 1;

double s = 0;

for (int i = 0; i < 9; i++)

{

s += Math.Cos((i + 1) \* x) / pow(x, i);

}

Console.WriteLine(s);

}

}

№5

using System;

class Program

{

static void Main()

{

double p = 2;

double h = 3;

double s=0;

for (int i = 0; i < 10; i++)

{

s += ((p + i \* h) \* (p + i \* h));

}

Console.WriteLine(s);

}

}

№6

using System;

class Program

{

public static void Main()

{

double y;

for (double x = -4; x <= 4; x += 0.5)

{

y = 0.5 \* x \* x - 7 \* x;

Console.WriteLine(y);

}

}

}

№7

using System;

class Program

{

static void Main()

{

int n = 6;

int f = 1;

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

{

f\*= i;

}

Console.WriteLine(f);

}

}

№8

using System;

class Program

{

static void Main()

{

int n = 6;

int s = 0;

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

{

int f = 1;

for (int j = 1; j <= i; j++)

{

f\*= j;

}

s += f;

}

Console.WriteLine(s);

}

}

№9

using System;

class Program

{

static void Main( )

{

double f = 1;

double s = 0;

for (int i = 1; i <= 6; i++)

{

f = (-1) \* f \* 5 / i;

s += f;

}

Console.WriteLine(s);

}

}

№10

using System;

class Program

{

static void Main()

{

int x = 3;

int y = 7;

int result = 1;

for (int i = 1; i <=y; i++)

{

result \*= x;

}

Console.WriteLine(result);

}

}

№11

а)

using System;

class Program

{

static void Main()

{

for (int i = 1; i <= 6; i++)

{

Console.Write(i + " ");

}

}

}

б)

using System;

class Program

{

static void Main()

{

int b = 5;

for (int i = 0; i < 6; i++)

{

Console.Write(b + " ");

}

}

}

№12

using System;

class Program

{

public static double pow(double x, int n)

{

double p = 1;

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

{

p = p \* x;

}

return p;

}

static void Main()

{

double x = 2;

double s = 0;

for (int i = 0; i <= 10; i++)

{

s += 1 / pow(x, i);

}

Console.WriteLine(s);

}

}

№13

using System;

class Program

{

static void Main()

{

for (double x = -1.5; x <= 1.5; x += 0.1)

{

if (x <= -1)

{

Console.WriteLine(1);

}

if (x > -1 && x <= 1)

{

Console.WriteLine(-x);

}

if (x > 1)

{

Console.WriteLine(-1);

}

}

}

}

№14

using System;

class Program

{

static void Main()

{

int n = 8;

int x1= 1;

int x2= 1;

Console.Write(x1 + " " + x2 + " ");

for (int i = 3; i <= n; i++)

{

int xn = x1+ x2;

Console.Write(xn + " ");

x1 = x2;

x2= xn;

}

}

}

№15

using System;

class Program

{

static void Main()

{

int n = 5;

double ch = 2;

double zn= 1;

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

{

double x = ch;

ch += zn;

zn = x;

}

Console.WriteLine($"{ch}/{zn}");

}

}

Уровень 2

№1

using System;

class Program

{

public static double pow(double x, int n)

{

double p = 1;

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

{

p = p \* x;

}

return p;

}

public static void Main()

{

double x = Convert.ToDouble(Console.ReadLine());

double eps = 0.0001;

double s = Math.Cos(x);

int n = 2;

double sl = Math.Cos(n \* x) / (pow(n, 2));

while (Math.Abs(sl) > eps)

{

s += sl;

sl = Math.Cos(n \* x) / (pow(n, 2));

n += 1;

}

Console.WriteLine(s);

}

}

№2

using System;

class Program

{

public static void Main()

{

int p = 1;

int n = 4;

int L = 30000;

while (p < L)

{

p \*= n;

n += 3;

}

Console.WriteLine(n-3);

}

}

№3

using System;

class Program

{

public static void Main()

{

int a = 1, h = 1, n = 0;

int p = Int32.Parse(Console.ReadLine());

int s = 0;

while (s < p)

{

s += a + n \* h;

n += 1;

}

Console.WriteLine(n);

}

}

№4

using System;

class Program

{

public static double pow(double x, int n)

{

double p = 1;

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

{

p = p \* x;

}

return p;

}

public static void Main()

{

double x = Convert.ToDouble(Console.ReadLine());

double eps = 0.0001;

double s = 0;

int n = 0;

double sl = pow(x, 2 \* n);

while (sl >= eps)

{

s += sl;

n += 1;

sl = pow(x, 2 \* n);

}

Console.WriteLine(s);

}

}

№5

using System;

class Program

{

static void Main()

{

int N = 10;

int M = 3;

int ch = 0;

int ost = N;

while (ost >= M)

{

ost -= M;

ch++;

}

Console.WriteLine("chastnoe: " + ch);

Console.WriteLine("ostatok: " + ost);

}

}

№6

using System;

class Program

{

static void Main( )

{

int n = 10;

int t = 0;

while (n <= 100000)

{

t += 3;

n \*= 2;

}

Console.WriteLine(t);

}

}

№7(а)

using System;

class Program

{

public static void Main()

{

double x = 10;

double s = 10;

double k = 0.1;

for (int i = 0; i < 7; i++)

{

x = x + x \* k;

s += x;

}

Console.WriteLine(s);

}

}

№7(б)

using System;

class Program

{

public static void Main()

{

double x = 10;

double s = 10;

double k = 0.1;

int n = 0;

while (s < 100)

{

x = x + x \* k;

s += x;

n += 1;

}

Console.WriteLine(n);

}

}

№7(в)

using System;

class Program

{

public static void Main()

{

double x = 10;

int n = 0;

double k = 0.1;

while (x <= 20)

{

x = x + x \* k;

n += 1;

}

Console.WriteLine(n);

}

}

№8

using System;

class Program

{

public static void Main()

{

double x = 10000;

int n = 0;

double s = 10000;

double k = 0.08;

while (s <= x\*2)

{

s += s\*k;

n += 1;

}

Console.WriteLine(n);

}

}

Урровень 3

№7

using System;

class Program

{

public static int factorial(int n)

{

if (n == 1 || n == 0)

{

return 1;

}

return n \* factorial(n - 1);

}

public static double pow(double x, int n)

{

double p = 1;

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

{

p = p \* x;

}

return p;

}

public static void Main()

{

;

double eps = 0.0001, a = 0.1, b = 1, h = 0.05;

for (double x = a; x <= b; x += h)

{

int i = 0;

double sl = pow(x, 2 \* i) / factorial(2 \* i), s;

s = sl;

while (sl > eps)

{

i += 1;

sl = pow(x, 2 \* i) / factorial(2 \* i) ;

s += sl;

}

Console.WriteLine(s);

double y = (Math.Exp(x) + Math.Exp(-x)) / 2;

Console.WriteLine(y);

Console.WriteLine();

}

}

}