**Задача 1**

// Method Niutona

double[] x = new double[] { 2.12, 3.432 };

int n = 5;

double afla = 0.001;

Console.WriteLine(f(x, n, afla));

double Shtraf(double[] X, int n, double alfa)

{

double ogr1 = X[0] + X[1] - 5;

double ogr2 = -X[0] + 2 \* X[1] - 6;

double ogr3 = -X[1] - 2;

ogr1 = Min(ogr1);

ogr2 = Min(ogr2);

ogr3 = Min(ogr3);

return (alfa \* (ogr1 \* ogr1 + ogr2 \* ogr2 + ogr3 \* ogr3));

}

double f(double[] X, int n, double alfa)

{

double f = (Math.Pow(X[0],2) - (6 \* X[0]) + 4 + Math.Exp(2 \* X[0])) + Shtraf(X, n, alfa);

return f;

}

double Min(double z)

{

double rez;

if (z < 0)

rez = z;

else

rez = 0;

return rez;

}

// Method Hord

double x0 = 2;

double x1 = 10;

double e = 0.001;

double x = method\_chord(x0, x1, e);

Console.WriteLine(x);

Console.ReadLine();

static double method\_chord(double x\_prev, double x\_curr, double e)

{

double x\_next = 0;

double tmp;

do

{

tmp = x\_next;

x\_next = x\_curr - f(x\_curr) \* (x\_prev - x\_curr) / (f(x\_prev) - f(x\_curr));

x\_prev = x\_curr;

x\_curr = tmp;

} while (Math.Abs(x\_next - x\_curr) > e);

return x\_next;

}

static double f(double x)

{

return (Math.Pow(x, 2) - (6 \* x) + 4 + Math.Exp(2 \* x));

}

static void MiddlePoint(int a, int b, double e)

{

int Xk = (a + b) / 2;

if (Math.Abs(b - a) < e)

Console.WriteLine("Экстремум находится в точке: {0}", Xk);

else

{

double result = f(Xk);

if (result < 0)

{

a = a + 1;

b = b + 1;

}

else

{

a = a + 1;

b = Xk;

}

MiddlePoint(a, b, e);

}

}

**Задача 2**

static double f(double x1, double x2, double a, double b, double c, double d, double p)

{

return (a \* x1 + b \* x2 + c \* Math.Pow(x1, 2) + d \* Math.Pow(x2, 2)) + p;

}

static double f2(double x1, double x2, double a, double b, double c, double d)

{

return a \* x1 + b \* x2 + Math.Exp(c \* Math.Pow(x1, 2) + d \* Math.Pow(x2, 2));

}

double a = 19;

double a2 = 12;

double b = 12;

double b2 = -0.3;

double c = -9;

double c2 = 1.44;

double d = -1;

double d2 = 0.22;

double e = 0;

double x1 = 2;

double x2 = 1;

Console.WriteLine("MaxResult1: "+f(x1, x2, a, b, c, d, e));

Console.WriteLine("MaxResult2: "+f(x1, x2, a2, b2, c2, d2, e));

Console.WriteLine("MinResult1: " + f2(x1, x2, a, b, c, d));

Console.WriteLine("MinResult2: " + f2(x1, x2, a2, b2, c2, d2));