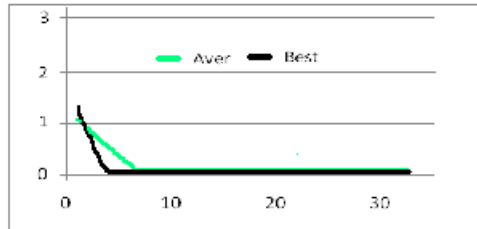


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$$y = \sin^6(5\pi x)$$



CODE:

```
#include <iostream>
#include <time.h>
#include <math.h>
#include <stdio.h>
class Chromosoma
{
class Population
{
    private static int population_count = 300;
    private static Random rnd = new Random();
    List<Chromosoma> population;

    private static int num_in_ch = 20;
    private static Random rnd = new Random();
    private double handsome = num_in_ch;
    //ceils
    private double[] a = new double[num_in_ch];

    public Chromosoma()
    {
        GenerateRandom();
    }

    public Chromosoma(Chromosoma _a, Chromosoma _b)
    {
        for (int i = 0; i < num_in_ch; i++)
        {
            //rnd.NextDouble(10)
            a[i] = rnd.Next(2) > 0 ? _a.getCeilByNum(i) : _b.getCeilByNum(i);

            handsome += Math.Pow(Math.Sin(5 * Math.PI * a[i]), 6);
        }
    }

    public void MakeItHalf()
    {
        population.RemoveRange(population_count / 2, population_count / 2);
    }

    public double GetTopHandsome()
    {
        return population[0].GetHandsome();
    }
}
for (i=0; i<20; i++)
{
```

```

        x[i]=0;
        for (j=0; j<10; j++)
        {
            x[i]+=parents[i][j]*pow(2.0,(9-j));
        }
        x[i]=x[i]/1023;
        y[i]=pow(sin(5*3.14*x[i]),6);
    }

    for (i=0; i<19; i++)
    {
        if (y[i]>y[i+1])
        {
            x1=y[i];
            y[i]=y[i+1];
            y[i+1]=x1;
            for (j=0; j<10; j++)
            {
                temp=parents[i][j];
                parents[i][j]=parents[i+1][j];
                parents[i+1][j]=temp;
            }
            i=0;
        }
    }

    FILE *pfile;
    pfile=fopen("text.txt","w");

    for (i=0; i<20; i++)
    {
        for (j=0; j<10; j++)
        {
            cout<<parents[i][j]<<" ";
        }
        cout<<endl;
    }
    cout<<endl<<endl;
    number=0;

```