

### Zad 1

Kod źródłowy:

```
#include <iostream>
#include <fstream>

using namespace std;

double pi = 3.14159265359;

double ton_prosty(double a, double F, double phi, double t)
{
    double s = a * sin(2 * pi * F * t + phi);
    return s;
}

int main()
{
    double a = 1; //volty
    double A = 9; //z numeru albumu
    double F = 8;
    double phi = 2 * pi;
    double fs = 250; // (?)
    double Ts = 1 / fs;

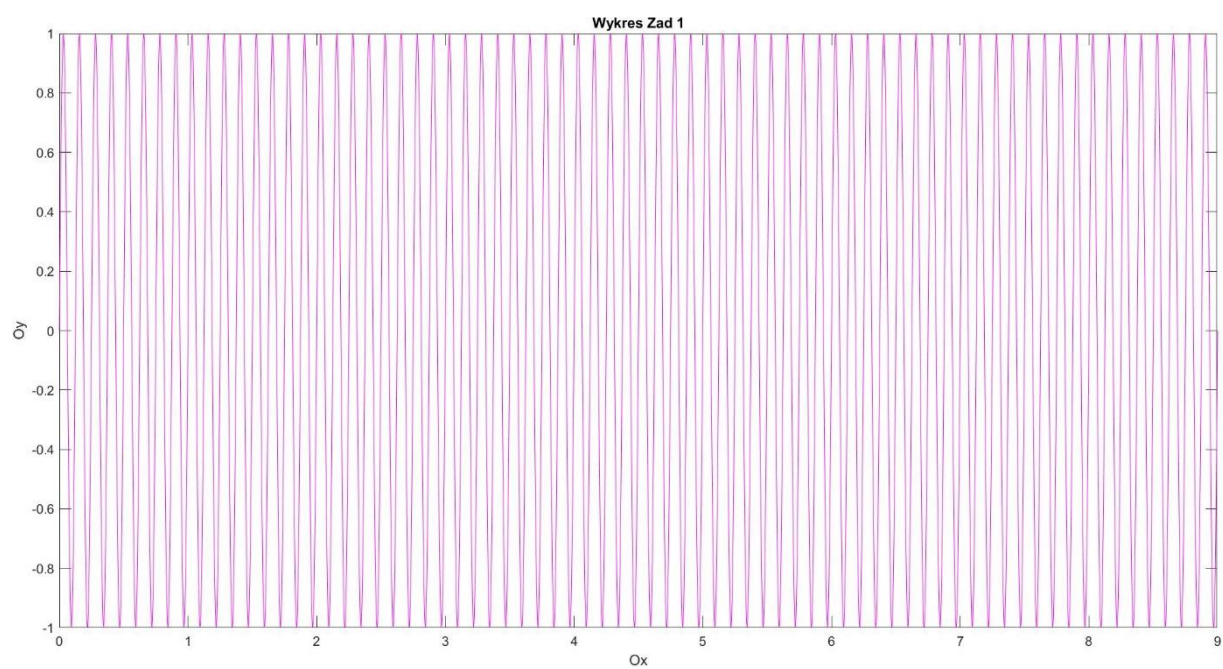
    ofstream saveOX("zad1OX.txt");
    ofstream savesig("zad1sig.txt");

    for (double i = 0; i < A; i = i + Ts)
    {
        double sig = ton_prosty(a, F, phi, i);
        cout << sig << endl;
        saveOX << i << endl;
        savesig << sig << endl;
    }
```

```
    saveOX.close();
    savesig.close();

    return 1;
}
```

Wykres:



## Zad 2

Kod źródłowy:

```
#include <iostream>
#include <fstream>

using namespace std;

double pi = 3.14159265359;

double ton_prosty(double a, double F, double phi, double t)
{
    double s = a * sin(2 * pi * F * t + phi);
    return s;
}

int kwantyzacja(double wartosc, int q)
{
    double quantum = wartosc * pow(2, q-1);

    if (quantum > 0)
        quantum = ceil(quantum);
    else
        quantum = floor(quantum);
    //cout << quantum << endl;
    return quantum;
}

int main()
{
    double a = 1; //volty
    double A = 9; //z numeru albumu
    double F = 8;
    double phi = 2 * pi;

    double fs = 125; // (?)
    double Ts = 1 / fs;

    double q = 8;

    ofstream saveOX("zad3OX.txt");
    ofstream savesigquant("zad3sigquant.txt");

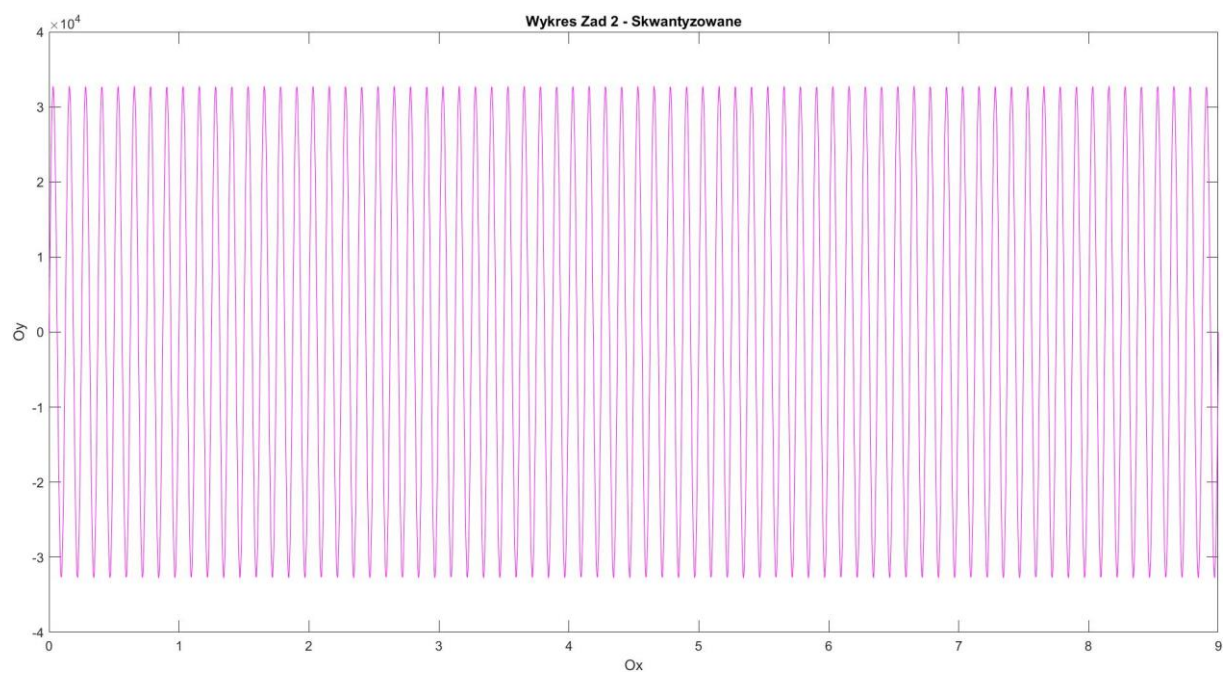
    for (double i = 0; i < A; i = i + Ts)
    {
        double sig = ton_prosty(a, F, phi, i);

        saveOX << i << endl;
        savesigquant << kwantyzacja(sig, q) << endl;
    }

    saveOX.close();
    savesigquant.close();

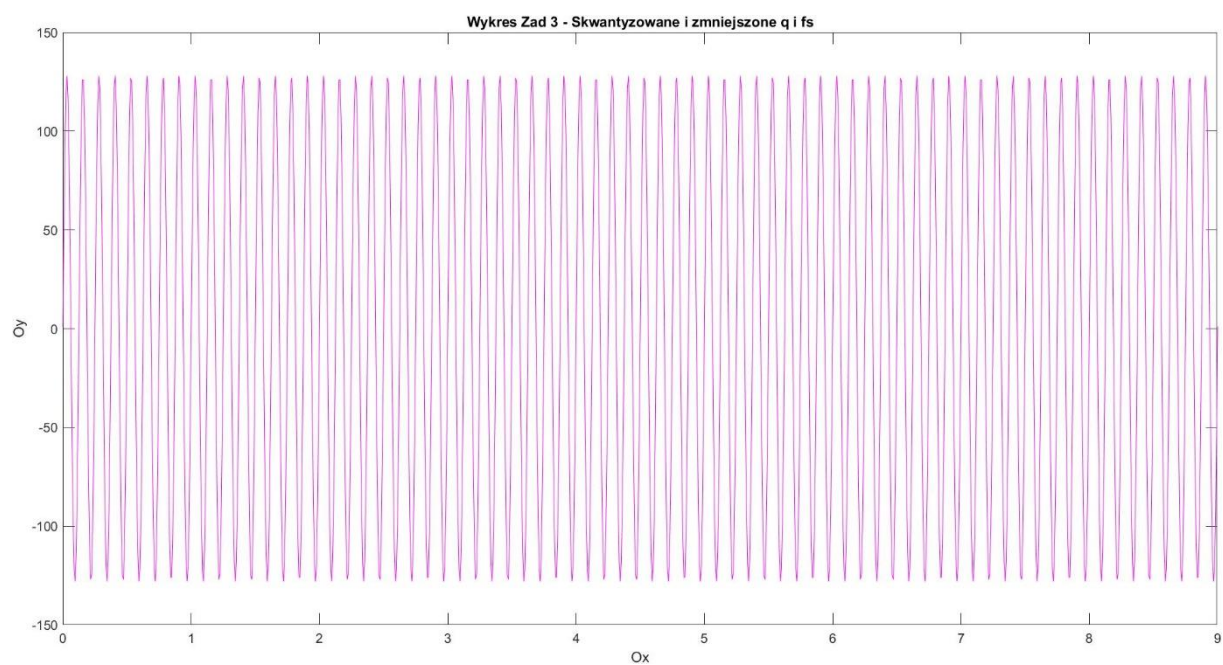
    return 1;
}
```

**Wykres:**



### **Zad 3**

**Wykres:**



- W ostatnim zadaniu zmiana dotyczyła tylko zmniejszenia dwóch wartości ( $q$  i  $f_s$ ) w kodzie zadania 2. Pozwoliłem sobie zatem nie załączać jego kodu.