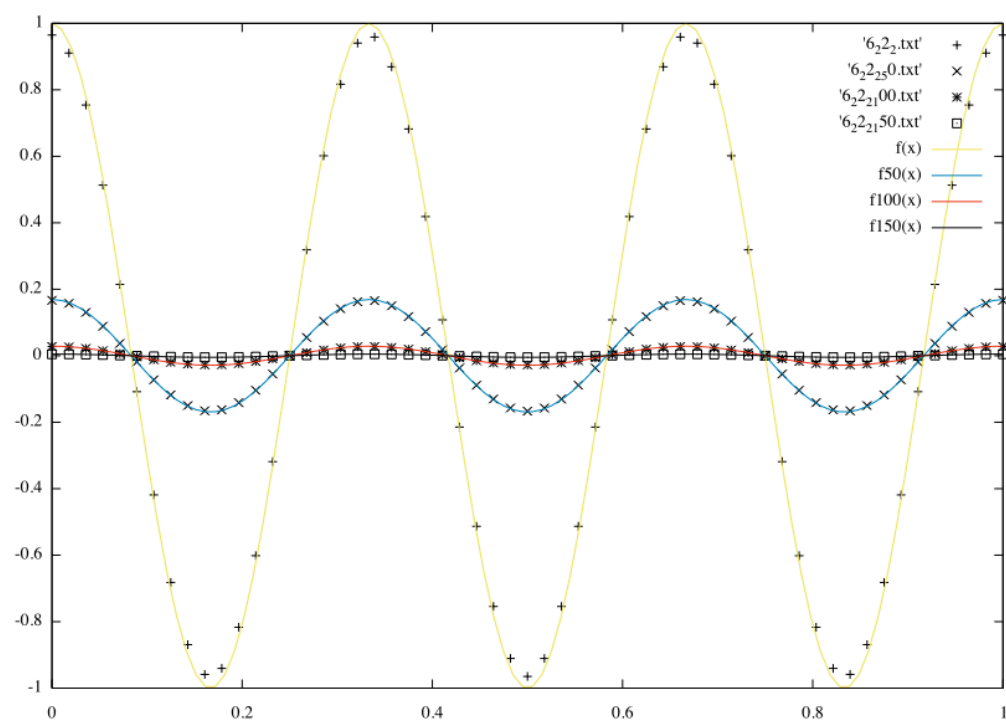
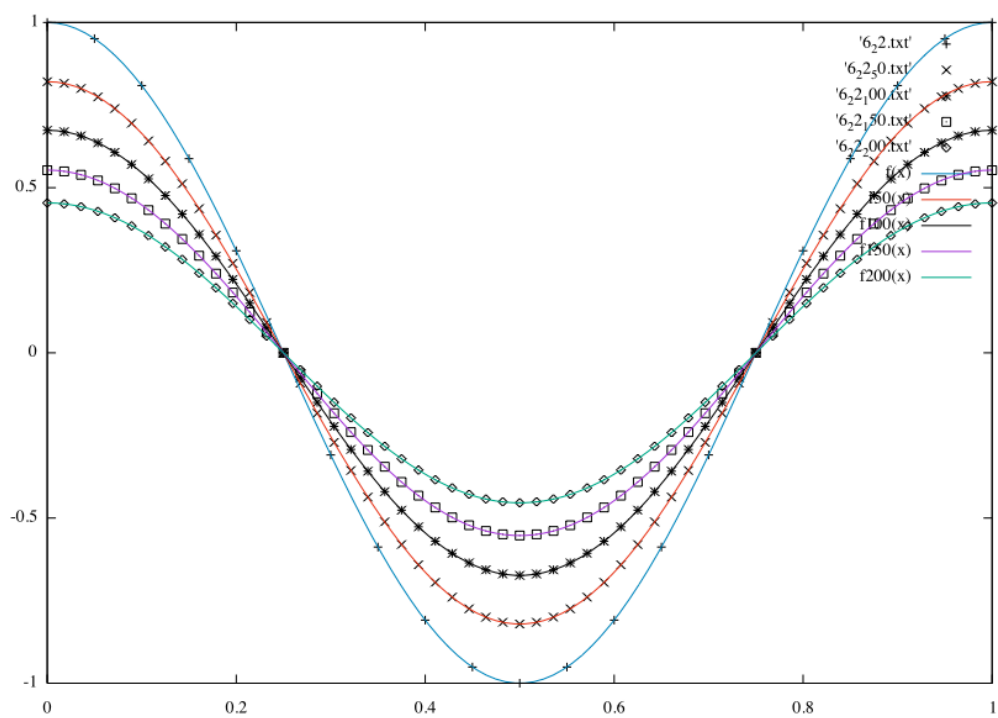


結果



考察

波長が短いほど減衰が早い

ソースコード

```
1  #include <stdio.h>
2  #include <math.h>
3
4  #define N 56
5  #define L 1.0
6  #define j 3.0
7  #define PI 3.1415926535897932384626
8  #define A 1.0
9  #define tstep 200
10
11 int main() {
12     double x[5*N+2],
13            f[5*N+2],
14            fn[5*N+2],
15            dx = (double) 1.0/N,
16            dt = 0.0001;
17     int i,
18         n;
19
20     //初期条件の設定
21     for(i=0; i<=5*N+1; i++) {
22         x[i] = (double) dx*i;
23     }
24
25     for (i=0; i<=5*N+1; i++) {
26         f[i] = A * cos(2*PI*j*x[i]/L);
27     }
28
29     //ステップを進めていく
30     for (n=0; n<tstep; n++) {
31
32         for (i=1; i<=5*N; i++) {
33             fn[i] = f[i] + dt / (dx*dx) * (f[i+1] - 2.0*f[i] + f[i-1]);
34         }
35         fn[0] = f[4*N] + dt / (dx*dx) * (f[4*N+1] - 2.0*f[4*N] + f[4*N-1]); //fn[4L]
36
37         for (i=0; i<=5*N+1; i++) {
38             f[i] = fn[i];
39         }
40     }
41
42
43
44     for (i=0; i<=N; i++) {
45         printf("%f %f\n", x[i], fn[i]);
46     }
47 }
```