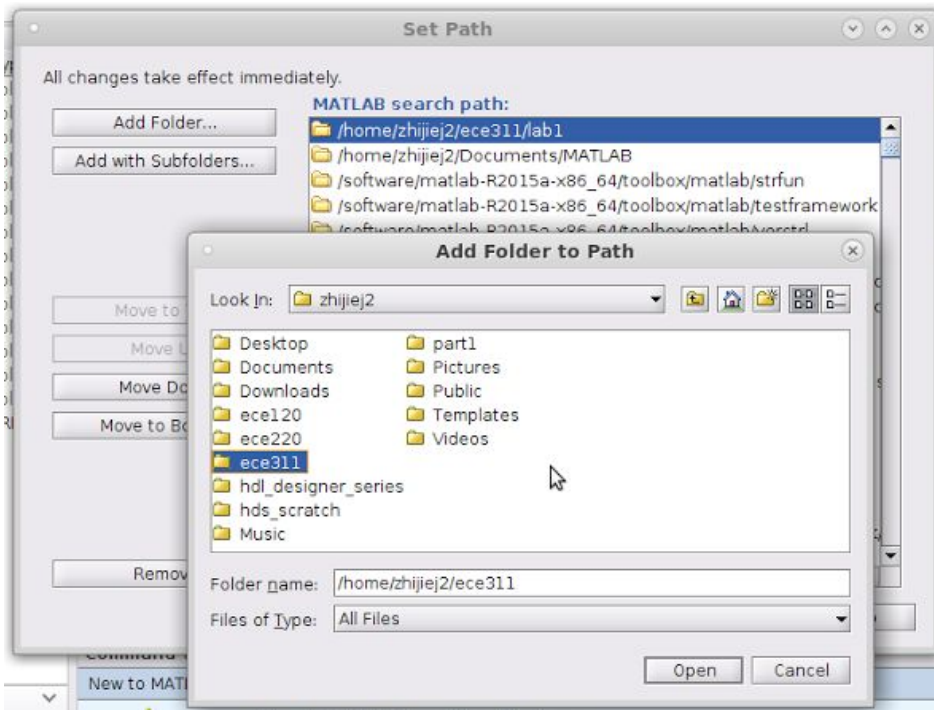
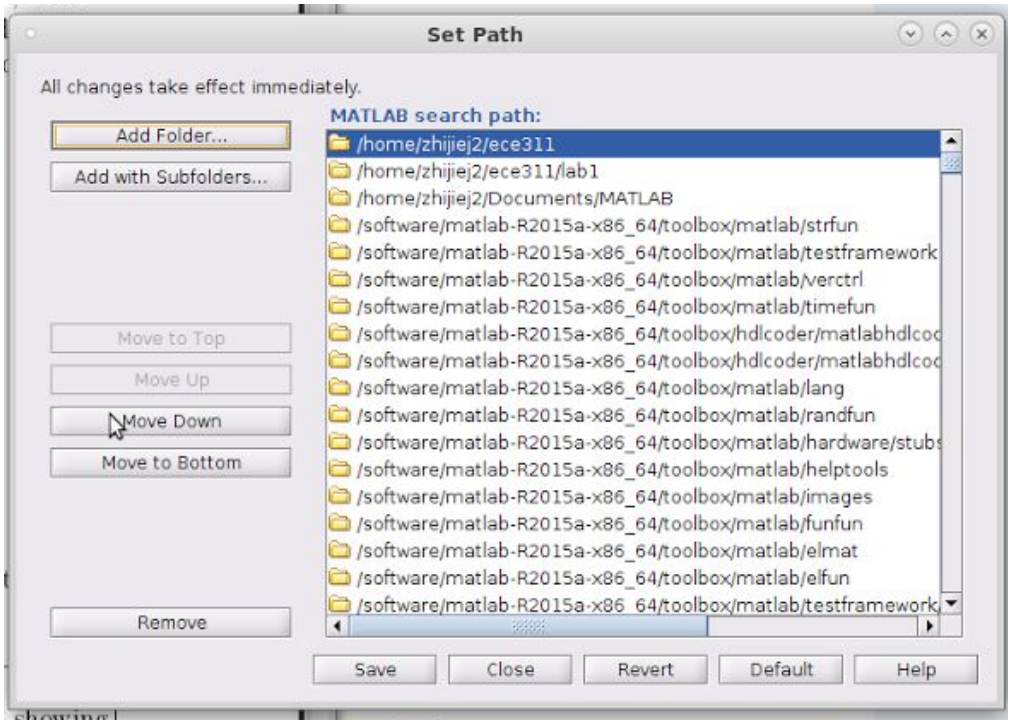
Lab1 Report
Zhijie Jin(zhijiej2)

2. Script





3. Vectors and Matrices

The command line for creating a N=12 vector over the range a=0, b=1 is: linspace(0,1,12)
And the result is:

ans =

Columns 1 through 10

0 0.0909 0.1818 0.2727 0.3636 0.4545 0.5455 0.6364 0.7273 0.8182

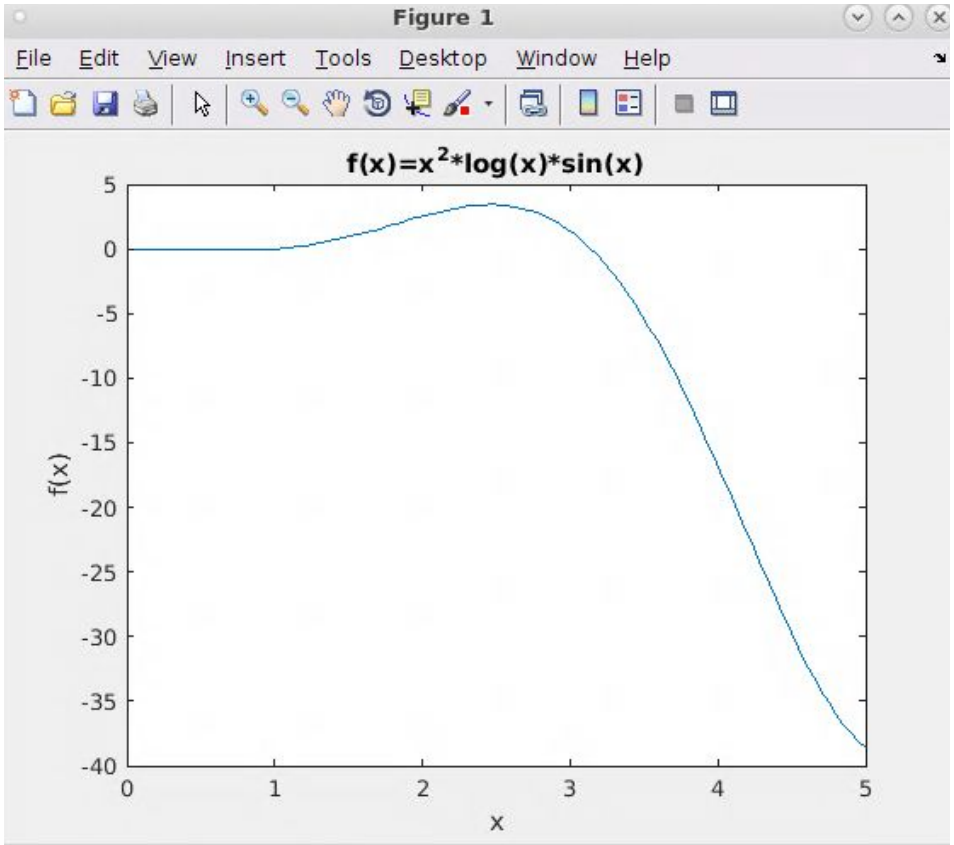
Columns 11 through 12

0.9091 1.0000

The exact gap between two points is 1/11, however, this could not be represented on Matlab properly(because it is an irrational number). The gap represented on Matlab is 0.0909. In terms of a, b and N, the gap is **(b-a)/(N-1)**.

4. Plots and Labels

a). f(x) = x^2*log(x)*sin(x)
The plot is:



b).

1).

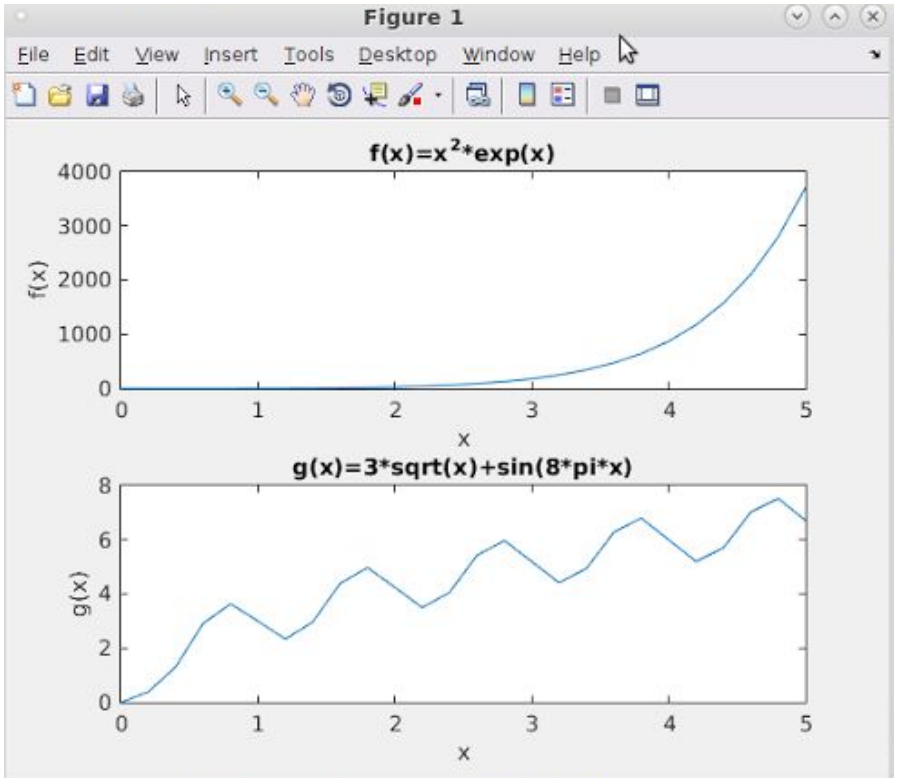


Figure 1
File Edit View Insert Tools Desktop Window Help
f(x)=x^2*exp(x)
f(x)
x
g(x)=3*sqrt(x)+sin(8*pi*x)
g(x)
x

2).

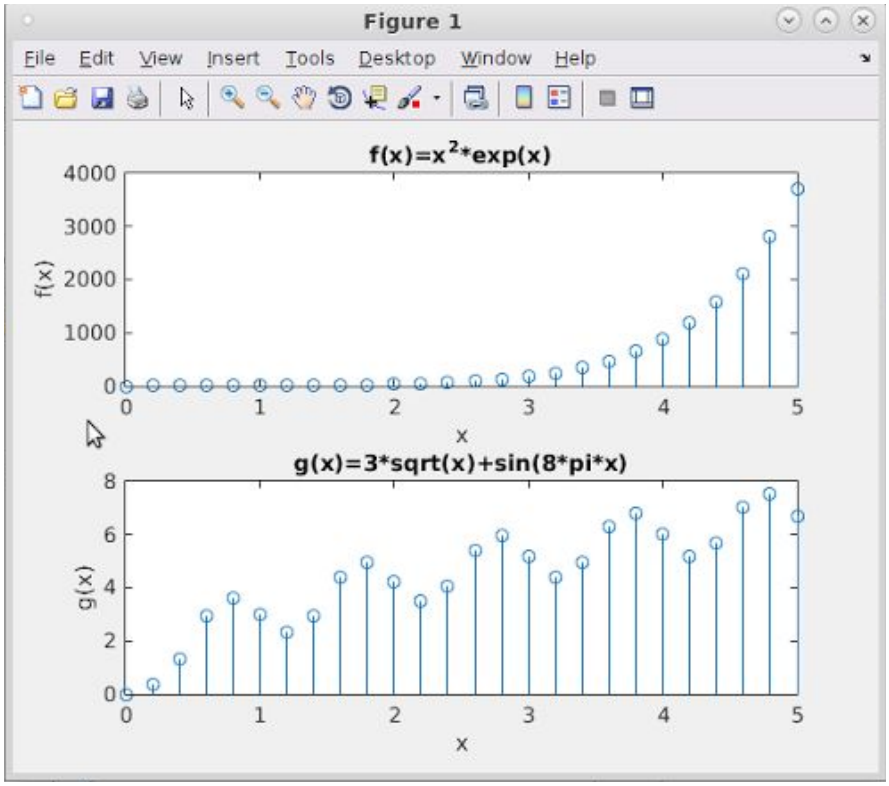
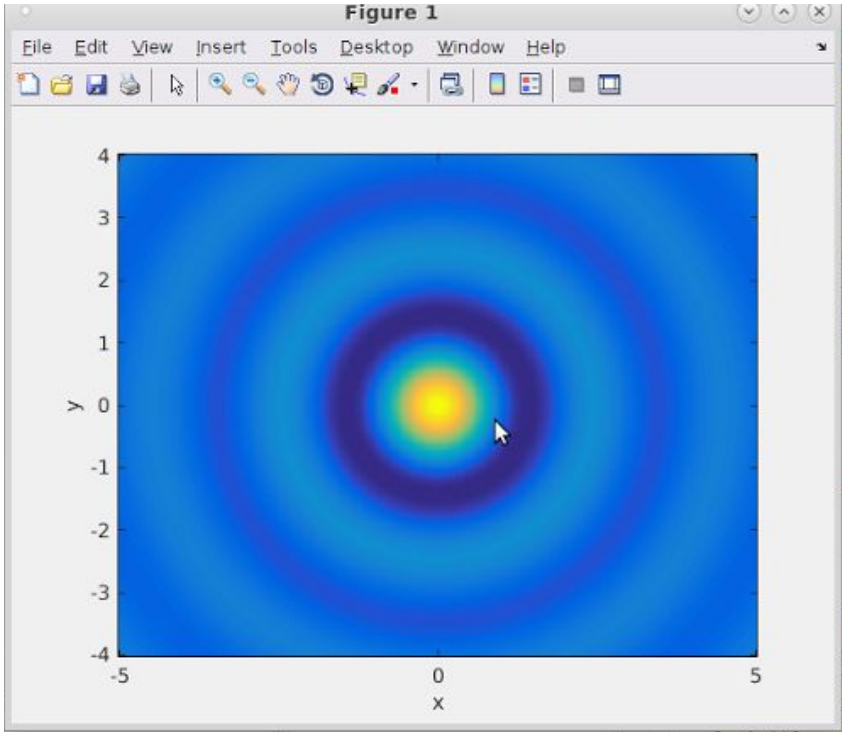


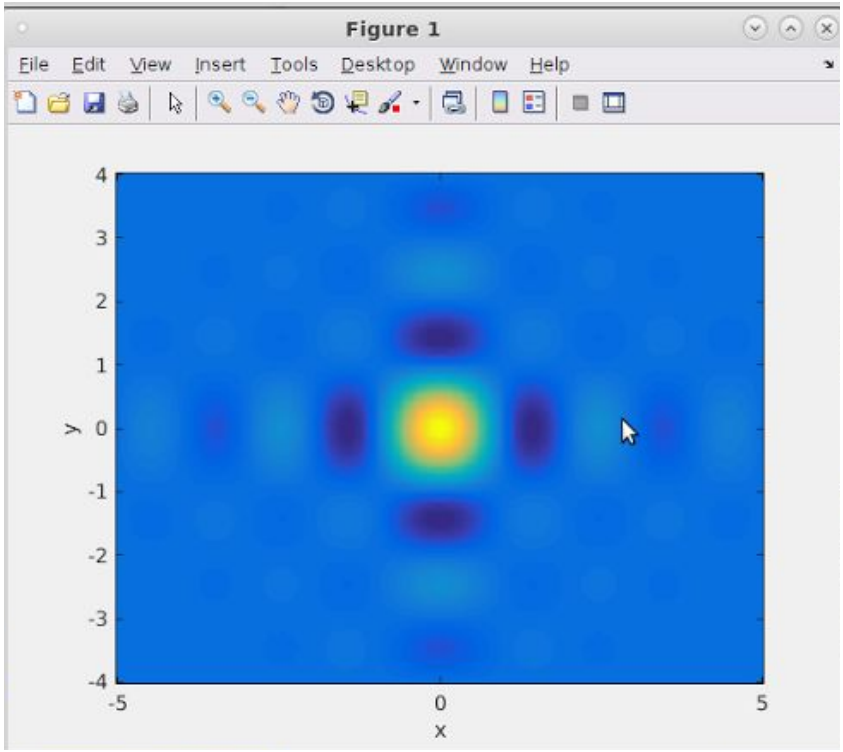
Figure 1
File Edit View Insert Tools Desktop Window Help
f(x)=x^2*exp(x)
f(x)
x
g(x)=3*sqrt(x)+sin(8*pi*x)
g(x)
x

6. Matrix Operations

1).



2).

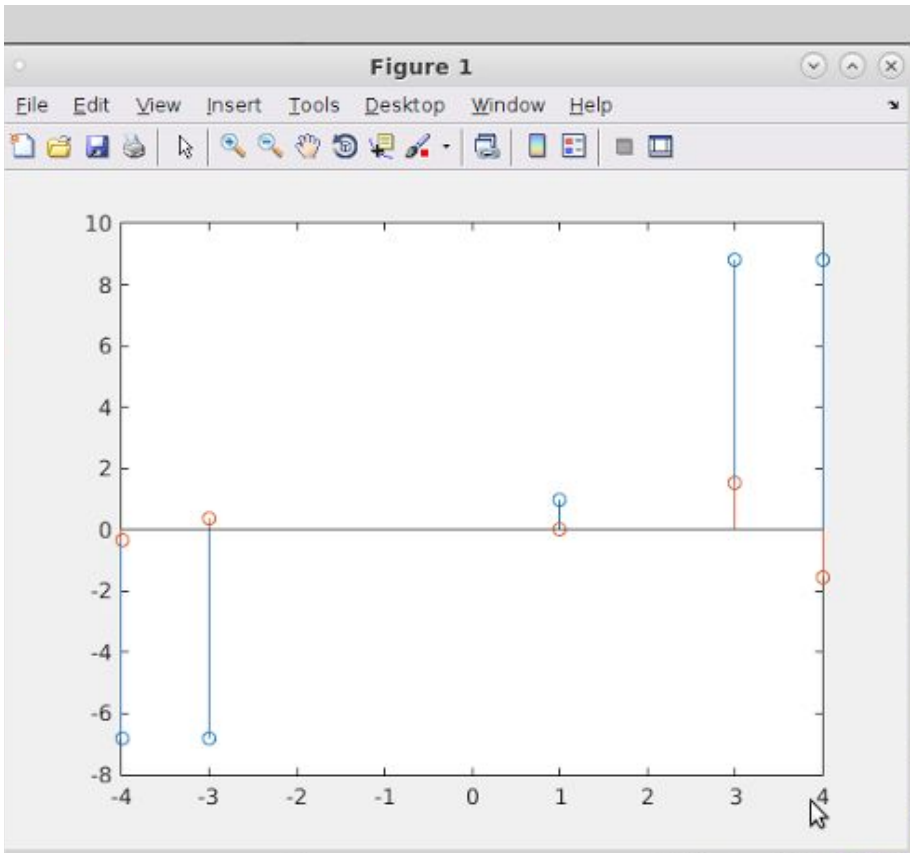


7. Functions

Results from DFT and FFT are the same.

```
DFT=
  Columns 1 through 3

   1.0000 + 0.0000i   8.8262 + 1.5388i  -6.8262 - 0.3633i

  Columns 4 through 5

  -6.8262 + 0.3633i   8.8262 - 1.5388i

FFT=
  Columns 1 through 3

   1.0000 + 0.0000i   8.8262 + 1.5388i  -6.8262 - 0.3633i

  Columns 4 through 5

  -6.8262 + 0.3633i   8.8262 - 1.5388i

Current plot held
>>
```

The imaginary and the real part of DFT are shown below.



8. Sounds and Images

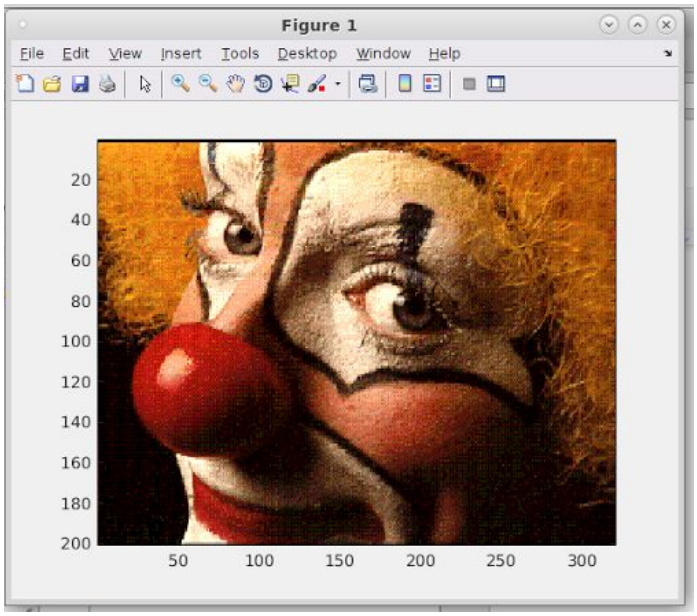
For sound:

The frequency I used is 8192 HZ. Human hearing is from 20Hz to 20kHz.

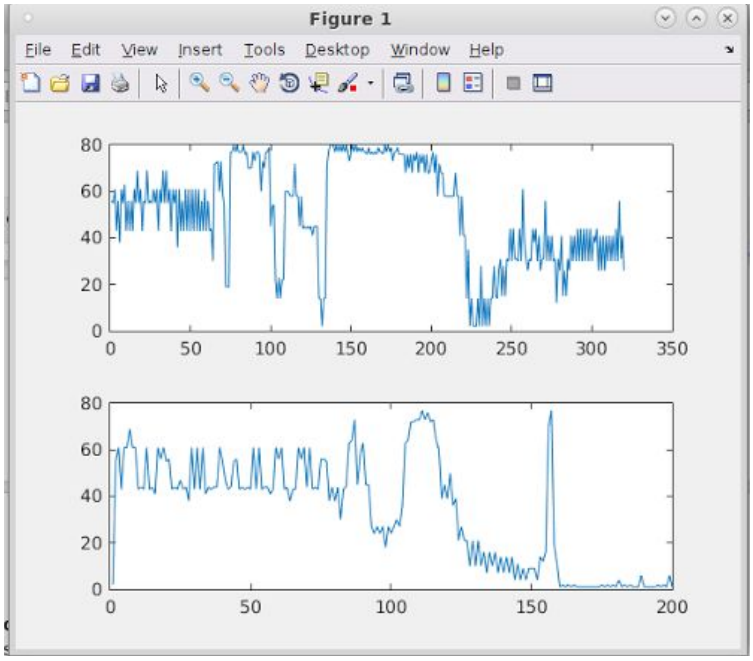
The sound I heard is “line up”.

For Image:

The image is:



17th row and 19th column is like this:



After transposing the image, it looks like this: