```
%question 1st

matrix1 = randi([1, 10], 3, 4);
matrix2 = randi([1, 10], 3, 4);

% 1) multiplication
elementwise_product = matrix1 .* matrix2;

% 2) summation
elementwise_sum = matrix1 + matrix2;

% 3)  division
elementwise_ratio = matrix1 ./ matrix2;

% 4) Remove 1st and 2nd column of the output obtained in (3)
modified_ratio_output = elementwise_ratio(:, 3:end);

% 5) Replace the 1st row in (i) with an array: 1, 2, 3, 4
elementwise_product(1, :) = [1, 2, 3, 4];


% (vi) Divide the output in (iii) by the number 7
division_by_7 = elementwise_ratio / 7;



disp('(i) Element-wise multiplication: ');
disp(elementwise_product);

disp('(ii) Element-wise summation: ');
disp(elementwise_sum);

disp('(iii) Element-wise division: ');
disp(elementwise_ratio);

disp('(iv) Modified output after removing 1st and 2nd column: ');
disp(modified_ratio_output);

disp('(v) Matrix after replacing the 1st row in (i): ');
disp(elementwise_product);

disp('(vi) Division of output in (iii) by 7: ');
disp(division_by_7);



%question 2
% Create vector v with elements 1 through 10
v = 1:10;

% i) x = v
x = v  .* v;

% ii) y = v/(v-1)
%v=1 is not valid
y = v./(v - 1);

% iii) z = 3v
z = 3 * v;

% iv) w = 3(1-v)
w = 3 * (1 - v);

% v) u = 3v + 1 + v
u = 3 * v + 1 + v;

% results
disp('1) x = ');
disp(x);

disp('2) y = ');
disp(y);

disp('3) z = ');
disp(z);

disp('4) w = ');
disp(w);

disp('5) u = ');
disp(u);



%qusetion 3
% Create vector v with elements 1 through 10
v = 1:10;

% i) x = v
x = v .* v;


% v=1 is not included
y = v./(v - 1);

figure;


subplot(2, 1, 1);
plot(v, x, '-o');
title('Plot of x with respect to v');
xlabel('v');
ylabel('x');

subplot(2, 1, 2);
plot(v, y, '-o');
title('Plot of y with respect to v');
xlabel('v');
ylabel('y');


sgtitle('Plots of x and y withrespect to v');



%question 4

% Define vectors x and y
x = [0, 5, 7];
y = [0, 2, 8];

% i)
m = (x > y) & (x > 4);

% ii)
n = x | y;

% iii)
o = ~(x | y);

% iv)
p = x .* y;

% v)
q = x ./ y;

% vi)
r = x.^y;


disp('i) m = ');
disp(m);

disp('ii) n = ');
disp(n);

disp('iii) o = ');
disp(o);

disp('iv) p = ');
disp(p);

disp('v) q = ');
disp(q);

disp('vi) r = ');
disp(r);



%question 5

v = -0.2:0.02:2;


disp('Vector v:');
disp(v);



%question 6


imagePath = 'C:\Users\vedant kasar\Downloads\pomsky-puppy-791798.jpg';

% Load the image
img = imread(imagePath);

% Display the image
figure;
imshow(img);
title('Captured Image');



%question 7

audioFilePath = 'C:\Users\vedant kasar\Downloads';

[y, Fs] = audioread(audioFilePath);

% waveform
figure;
plot((1:length(y))/Fs, y);
xlabel('Time (seconds)');
ylabel('Amplitude');
title('Waveform of the Audio');

% audio
sound(y, Fs);
```

```
>> S20230010118Lab01
(i) Element-wise multiplication:
     1     2     3     4
    24    63    10    54
    18    20    20     9

(ii) Element-wise summation:
    16    14     8     7
    11    16     7    15
     9    12    12     6

(iii) Element-wise division:
    1.0000    1.0000    0.3333    1.3333
    2.6667    0.7778    2.5000    0.6667
    0.5000    0.2000    5.0000    1.0000

(iv) Modified output after removing 1st and 2nd column:
    0.3333    1.3333
    2.5000    0.6667
    5.0000    1.0000

(v) Matrix after replacing the 1st row in (i):
     1     2     3     4
    24    63    10    54
    18    20    20     9

(vi) Division of output in (iii) by 7:
    0.1429    0.1429    0.0476    0.1905
    0.3810    0.1111    0.3571    0.0952
    0.0714    0.0286    0.7143    0.1429
```

```
question2
>> S20230010118Lab01
1) x =
     1     4     9    16    25    36    49    64    81   100

2) y =
  Columns 1 through 9

       Inf    2.0000    1.5000    1.3333    1.2500    1.2000    1.1667
1.1429    1.1250

  Column 10

    1.1111

3) z =
     3     6     9    12    15    18    21    24    27    30

4) w =
     0    -3    -6    -9   -12   -15   -18   -21   -24   -27

5) u =
     5     9    13    17    21    25    29    33    37    41
```

```
SOLUTION OF QUESTION 4
i) m =
   0   1   0

ii) n =
   0   1   1

iii) o =
   1   0   0

iv) p =
     0    10    56

v) q =
       NaN    2.5000    0.8750

vi) r =
           1          25     5764801
```

SOLUTION OF QUESTION 5

Vector v:

Columns 1 through 9

-0.2000 -0.1800 -0.1600 -0.1400 -0.1200 -0.1000 -0.0800 -0.0600 -0.0400

Columns 10 through 18

-0.0200 0 0.0200 0.0400 0.0600 0.0800 0.1000 0.1200 0.1400

Columns 19 through 27

0.1600 0.1800 0.2000 0.2200 0.2400 0.2600 0.2800 0.3000 0.3200

Columns 28 through 36

0.3400 0.3600 0.3800 0.4000 0.4200 0.4400 0.4600 0.4800 0.5000

Columns 37 through 45

0.5200 0.5400 0.5600 0.5800 0.6000 0.6200 0.6400 0.6600 0.6800

Columns 46 through 54

0.7000 0.7200 0.7400 0.7600 0.7800 0.8000 0.8200 0.8400 0.8600

Columns 55 through 63

0.8800 0.9000 0.9200 0.9400 0.9600 0.9800 1.0000 1.0200 1.0400

Columns 64 through 72

1.0600 1.0800 1.1000 1.1200 1.1400 1.1600 1.1800 1.2000 1.2200

Columns 73 through 81

1.2400 1.2600 1.2800 1.3000 1.3200 1.3400 1.3600 1.3800 1.4000

Columns 82 through 90

1.4200 1.4400 1.4600 1.4800 1.5000 1.5200 1.5400 1.5600 1.5800

Columns 91 through 99

1.6000 1.6200 1.6400 1.6600 1.6800 1.7000 1.7200 1.7400 1.7600

Columns 100 through 108

1.7800 1.8000 1.8200 1.8400 1.8600 1.8800 1.9000 1.9200 1.9400

Columns 109 through 111

1.9600 1.9800 2.0000

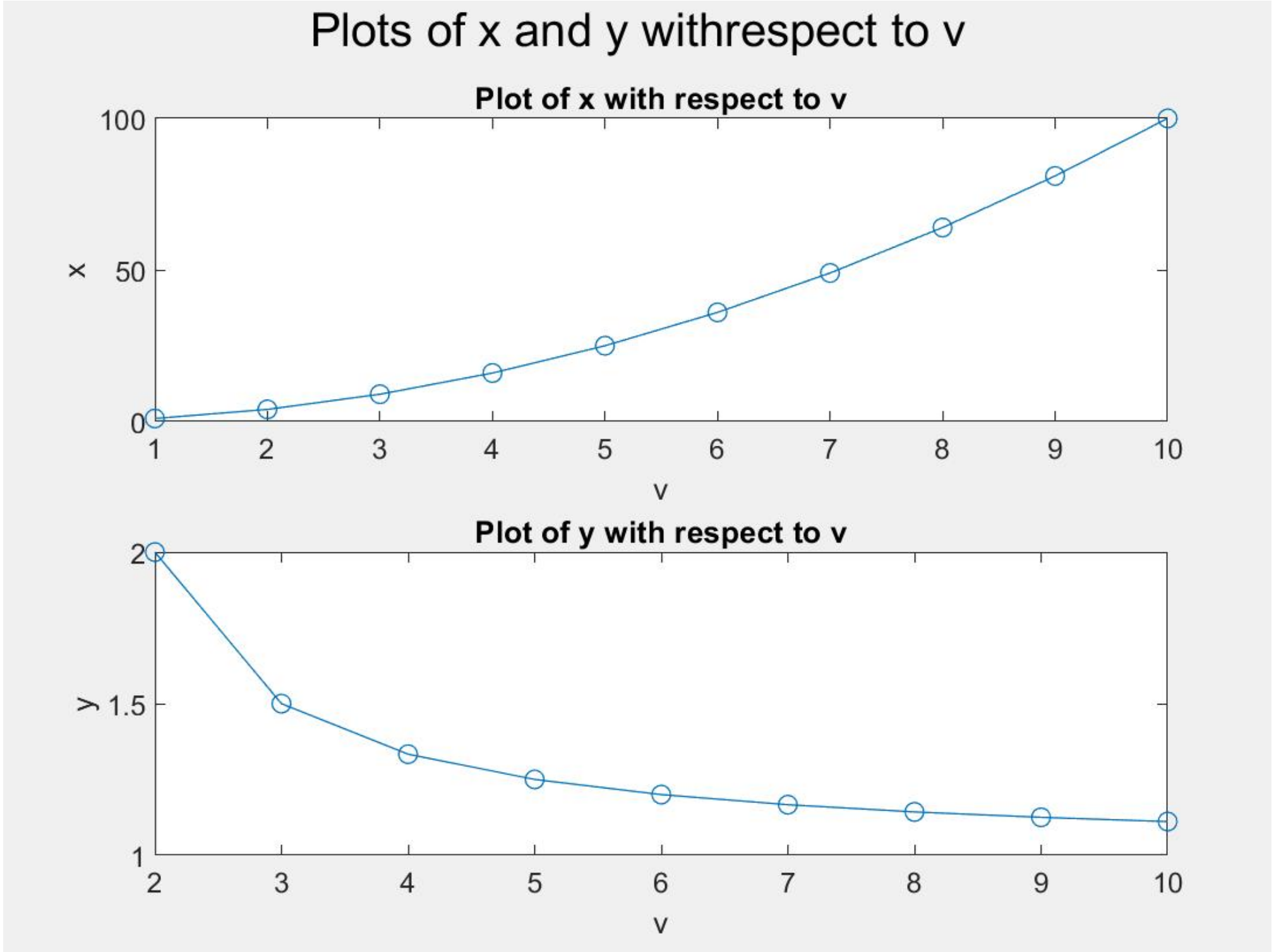

Plots of x and y withrespect to v
Plot of x with respect to v
100
50
0
x
1
2
3
4
5
6
7
8
9
10
v
Plot of y with respect to v
2
1.5
1
y
2
3
4
5
6
7
8
9
10
v

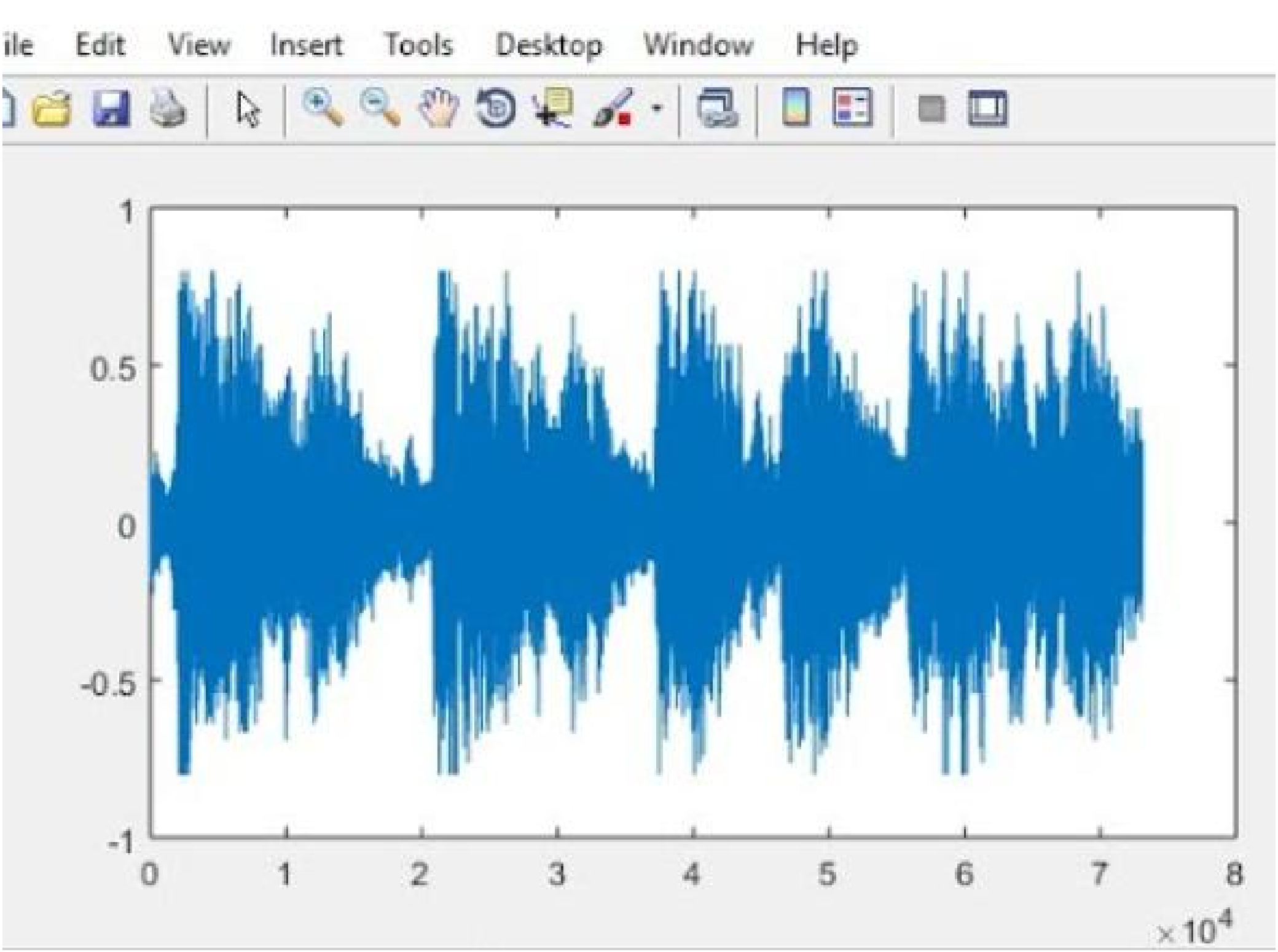
Figure 3

File Edit View Insert Tools Desktop Window Help

Captured Image

0230010118Lab01 (line 182)

d(imagePath);


ile Edit View Insert Tools Desktop Window Help
1
0.5
0
-0.5
-1
0
1
2
3
4
5
6
7
8
×10^4