信号与系统实验
第一次作业报告

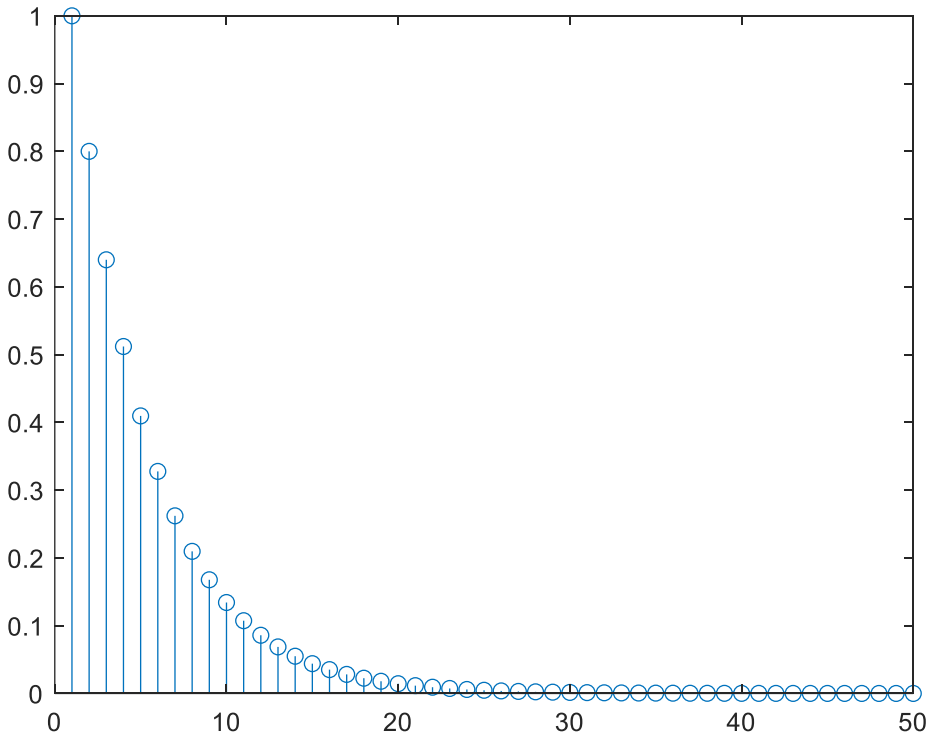
学号：1120230621　　姓名：闫子易

一、MATLAB 实验

实验代码及图形

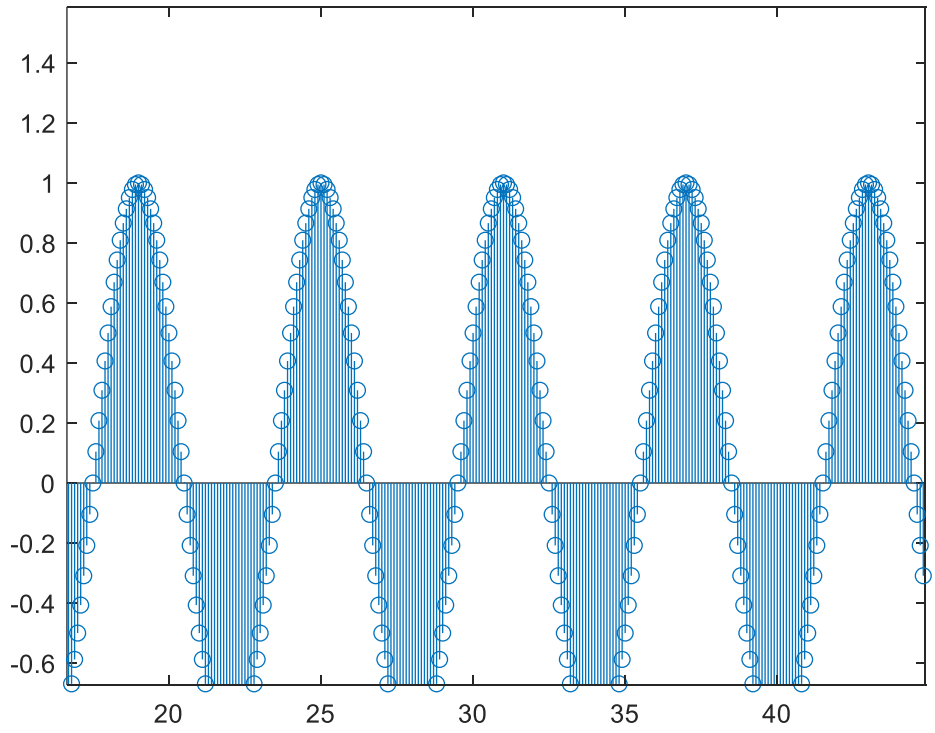
绘制实指数序列

```
%%
%绘制实指数序列
N=50;
n=0:N-1;
a=0.8;
x3=a.^n;                %实指数序列
figure('name','实指数序列');
stem(x3);
```



绘制正弦序列

```
N=50;
n=(-0.1):0.1:N-1;
w0=pi/3;
ang=pi/6;
x4=sin(n*w0+ang);     %正弦序列
figure('name','正弦序列');
%plot(x4);            %绘制正弦函数
stem(n,x4);
axis([-100,100,-2,2]);  %限幅
```



创建矩阵

```
%%
x = 0:0.1:6
length(x)
```

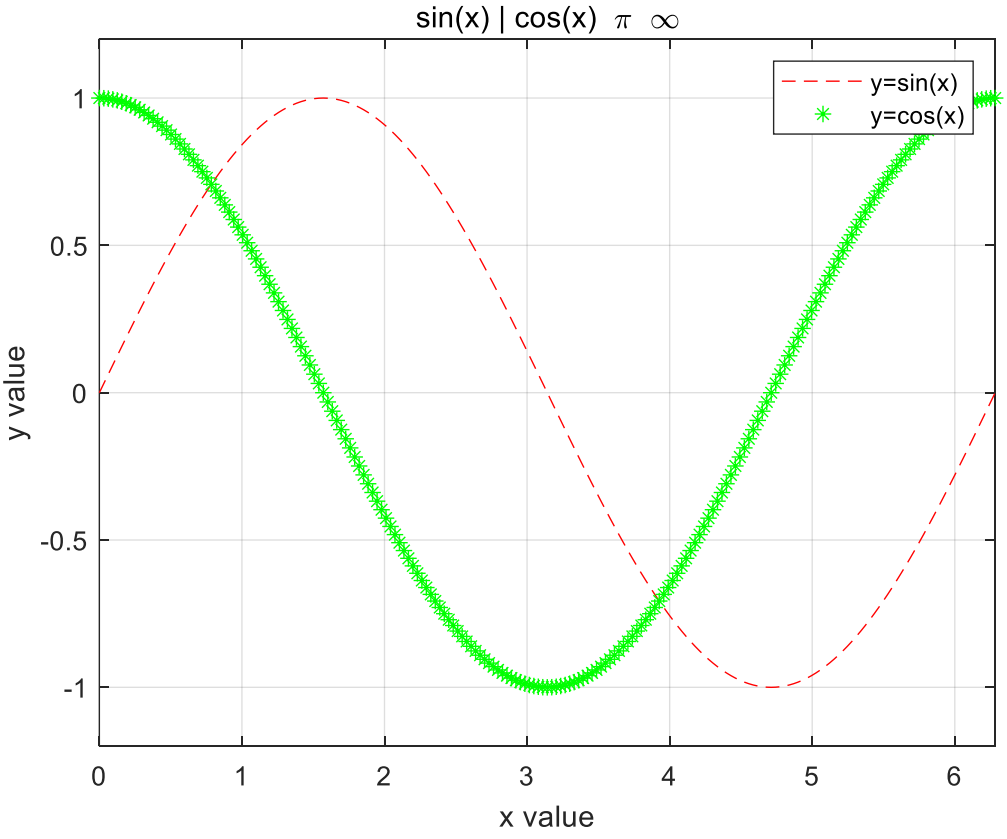
```
x =

  列 1 至 11
```

```
         0     0.1000     0.2000     0.3000     0.4000     0.5000     0.6000
0.7000    0.8000    0.9000    1.0000

  列 12 至 22

    1.1000     1.2000     1.3000     1.4000     1.5000     1.6000     1.7000
1.8000    1.9000    2.0000    2.1000

  列 23 至 33

    2.2000     2.3000     2.4000     2.5000     2.6000     2.7000     2.8000
2.9000    3.0000    3.1000    3.2000

  列 34 至 44

    3.3000     3.4000     3.5000     3.6000     3.7000     3.8000     3.9000
4.0000    4.1000    4.2000    4.3000

  列 45 至 55

    4.4000     4.5000     4.6000     4.7000     4.8000     4.9000     5.0000
5.1000    5.2000    5.3000    5.4000

  列 56 至 61

    5.5000    5.6000    5.7000    5.8000    5.9000    6.0000


ans =

    61
```

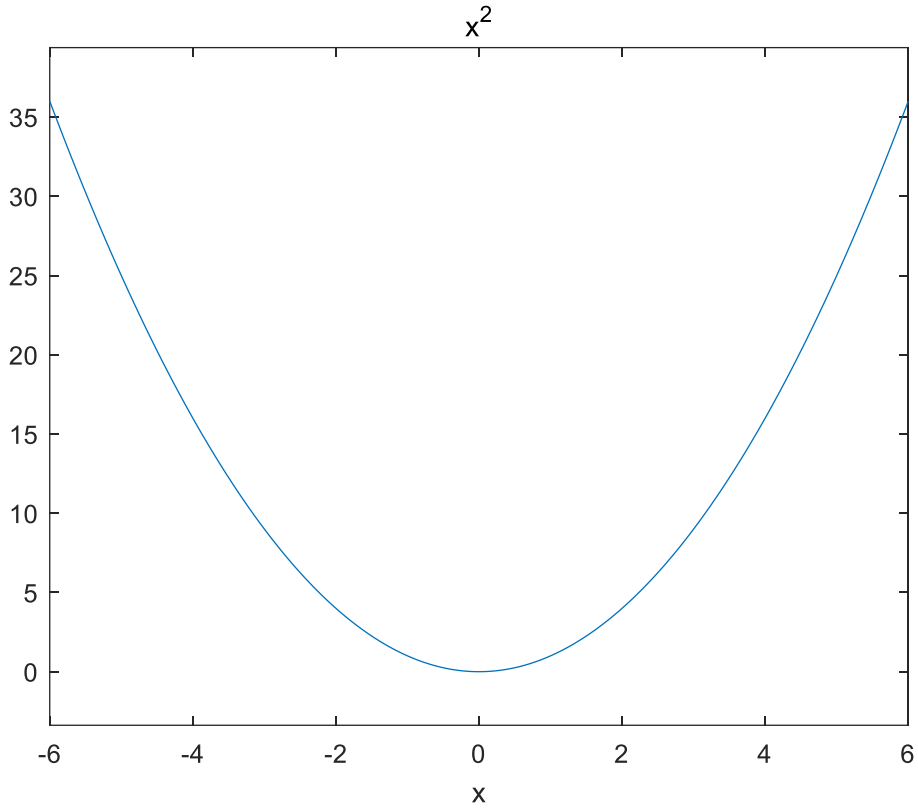
```
%%
x = sym('x')
s =  x^2 -x-4*x+6
factor(s)
expand(s)
collect(s)
```

```
x =

x


s =

x^2 - 5*x + 6


ans =

[x - 2, x - 3]


ans =

x^2 - 5*x + 6


ans =

x^2 - 5*x + 6
x - 2, x - 3]


ans =

x^2 - 5*x
```

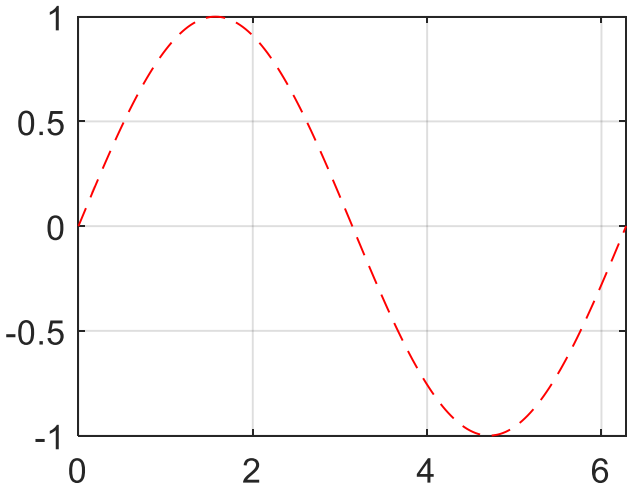
```
%%

x = 0:pi/100:2*pi;
y1 = sin(x);
figure;

%subplot(1,2,1)
plot(x,y1,'r--');
grid on

hold on

y2 = cos(x);
%subplot(1,2,2)
plot(x,y2,'g*');

axis( [ 0 2*pi -1.2 1.2 ] )

xlabel('x value')
ylabel('y value')
title('sin(x) | cos(x)  \pi  \infty')
legend('y=sin(x)', 'y=cos(x)')
```

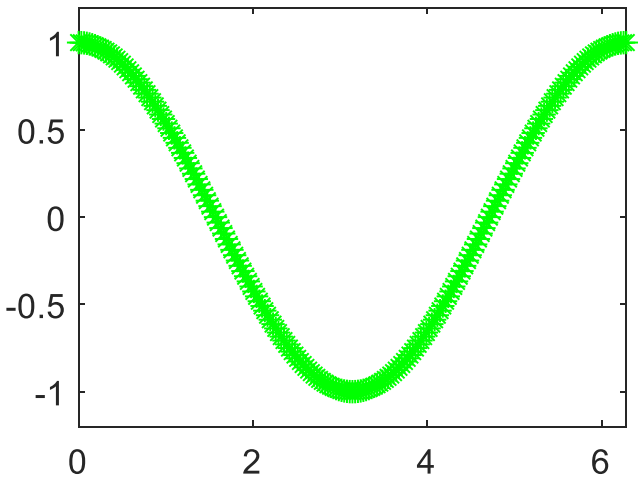


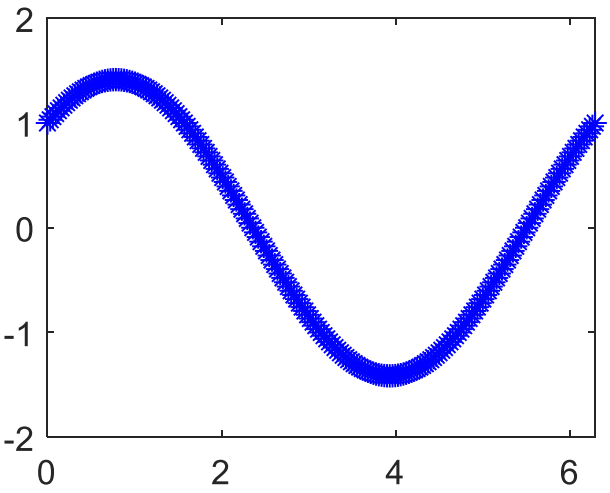
```
%%
x = sym('x')
ezplot(x^2);
ezplot(x^2,[-6,6]);
```

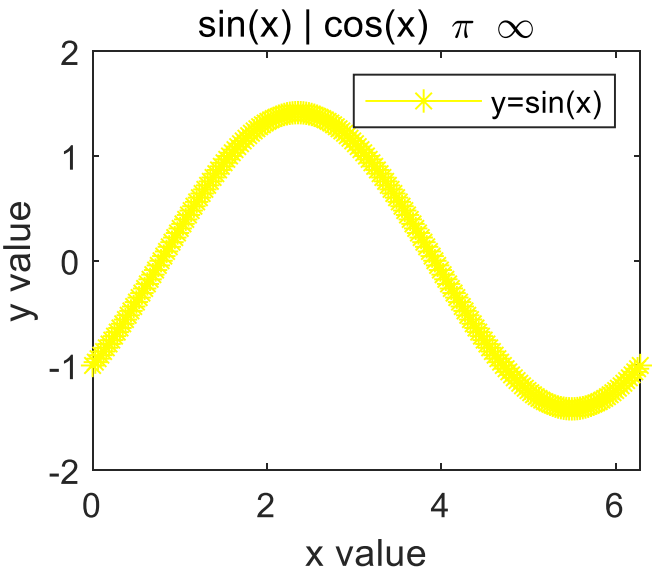


```
%%

x = 0:pi/100:2*pi;
y1 = sin(x);
figure;

subplot(2,2,1)
plot(x,y1,'r--');
grid on

hold on

y2 = cos(x);
subplot(2,2,2)
plot(x,y2,'g*');

axis( [ 0 2*pi -1.2 1.2 ] )

y3 = y1+y2;
subplot(2,2,3)
plot(x,y3,'b*');
axis( [ 0 2*pi -2 2 ] )


y4 = y1-y2;
subplot(2,2,4)
plot(x,y4,'y-*');
axis( [ 0 2*pi -2 2 ] )


xlabel('x value')
ylabel('y value')
title('sin(x) | cos(x)  \pi  \infty')
legend('y=sin(x)', 'y=cos(x)')
```










```
%%

y = 0;
x = 0:10:100;
for i = 1:10
    y = y+x(i)
end
```

```
y =

     0
```

y =

10

y =

30

y =

60

y =

100

y =

150

y =

210

y =

280

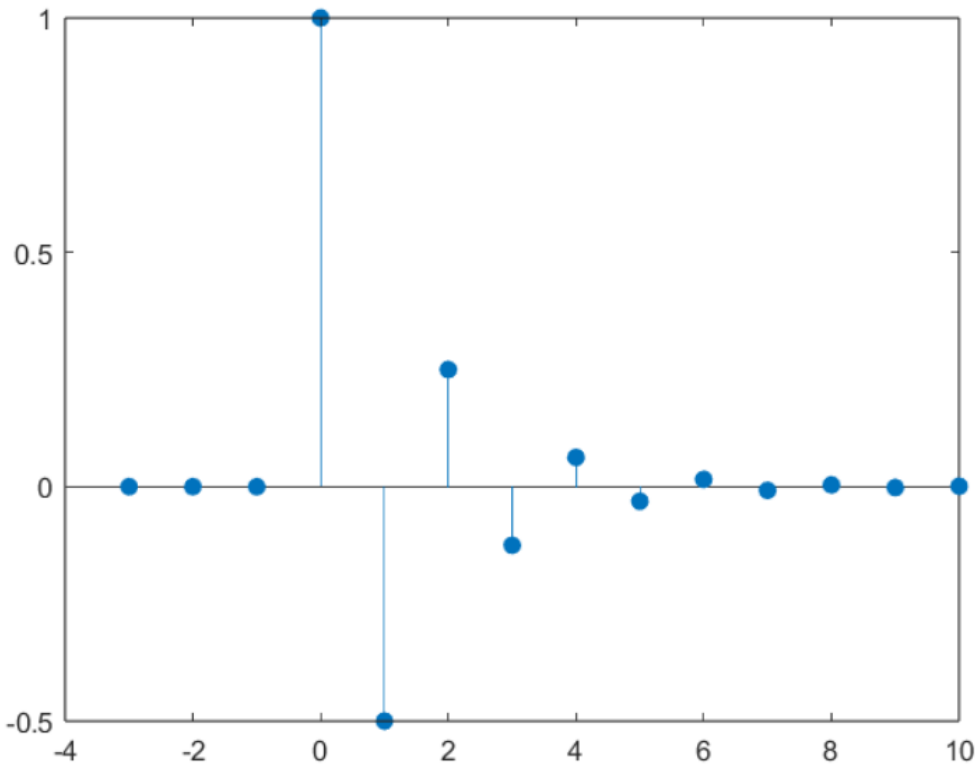
y =

360

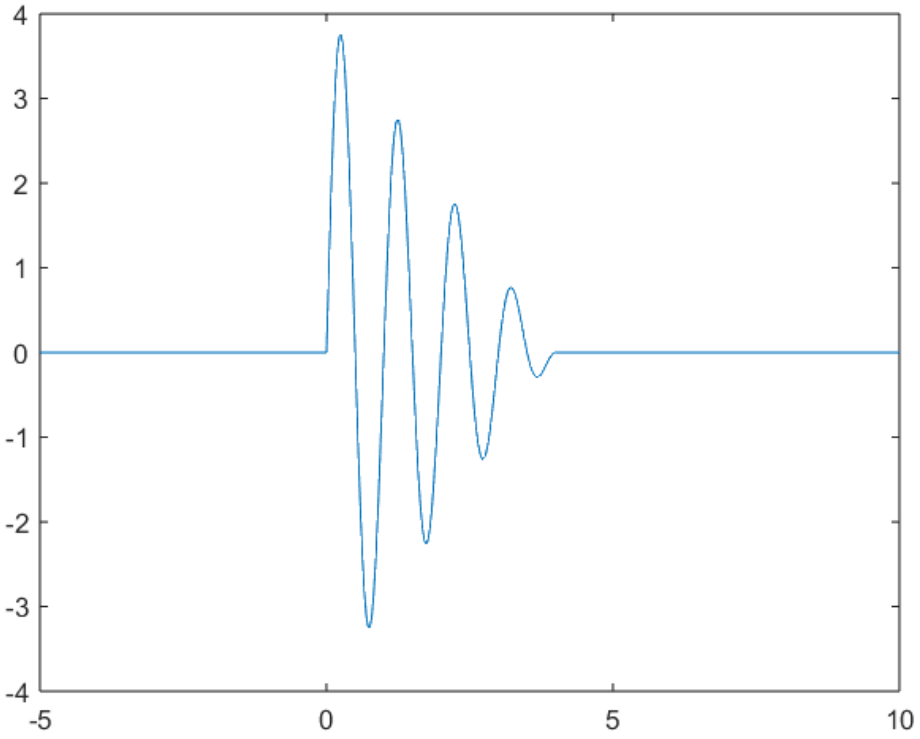
y =

450

```
n=-3:10;
x=(-1/2).^n.*(n>=0);
figure;stem(n,x,'filled');
```




```
n=-3:10;
x=(-1/2).^n.*(n>=0t=-5:0.01:10;
x1=(4-t+1).*(t-1>=0&t-1<4);x2=sin(2*pi*(t-1));
x3=x1+x2;x4=sin(2*pi*t);
x6=x4*x3;figure;plot(t,x6););
figure;stem(n,x,'filled');
```


4
3
2
1
0
-1
-2
-3
-4
-5
0
5
10