

## Exercise2

2007.03.20

### 1(a)

```
A=imread('CMW2.jpg');  
image(A);
```

### 1(b)

```
IG=rgb2gray(A);  
imwrite(IG,'cmw2.bmp','bmp');
```

### 1(c)

```
B=imread('cmw2.bmp');  
figure;  
imshow(B);
```

### 1(d)

```
%90  
C=B';  
[m1,n1]=size(C);  
C=C(:,n1:-1:1);  
figure;  
subplot(2,2,1);  
imshow(C);  
%180  
D=C';  
[m2,n2]=size(D);  
D=D(:,n2:-1:1);  
subplot(2,2,2);  
imshow(D);  
%270  
E=D';  
[m3,n3]=size(E);  
E=E(:,n3:-1:1);  
subplot(2,2,3);  
imshow(E);
```

### 1(e)

```
%vertical
```

```

[m4,n4]=size(B);
F=B(m4:-1:1,:);
figure;
subplot(1,2,1);
imshow(F);
%horizontal
G=B(:,n4:-1:1);
subplot(1,2,2);
imshow(G);
1(f)
[m,n]=size(B);
H=B(1:ceil(m/2),ceil(n/2):n);
figure;
imshow(H);
1(g)
I=255-B;
figure;
imshow(I);

```

## 2(a)

```

[s1,fs]=wavread('ws_20022.wav');
wavplay(s1,fs);
subplot(2,1,1);
plot(1:length(s1),s1(:,1));
subplot(2,1,2);
plot(1:length(s1),s1(:,2));

```

## 2(b)

```

s2=[s1;s1;s1];
figure;
subplot(2,1,1);
plot(1:length(s2),s2(:,1));
subplot(2,1,2);
plot(1:length(s2),s2(:,2));

```

## 2(c)

```

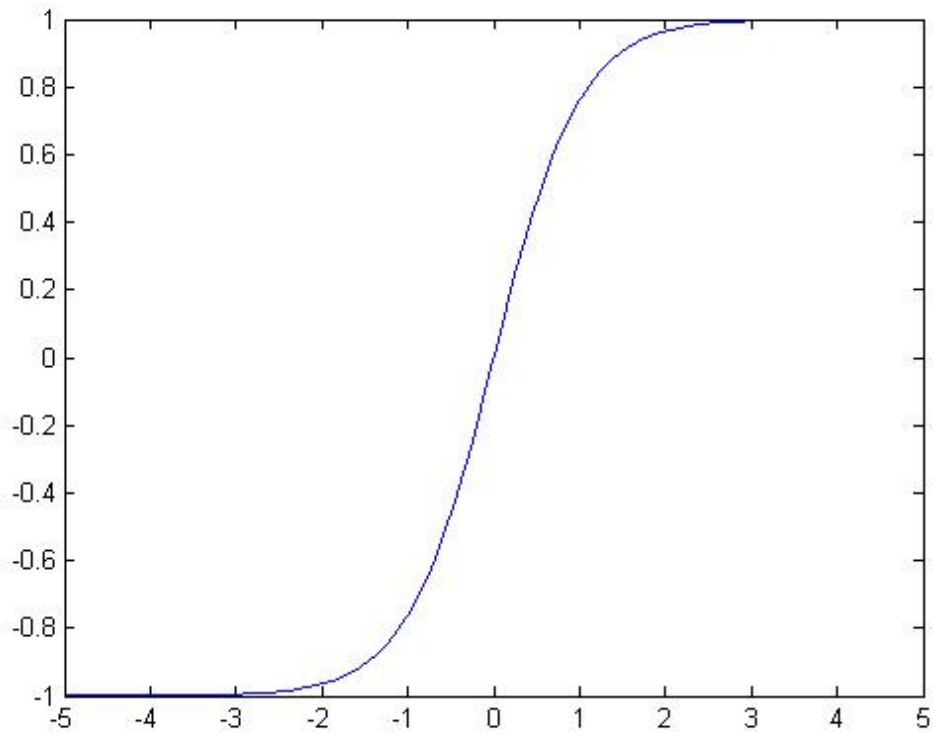
s3=s1(length(s1):-1:1,:);
figure;
subplot(2,1,1);
plot(1:length(s3),s3(:,1));

```

```
subplot(2,1,2);  
plot(1:length(s3),s3(:,2));
```

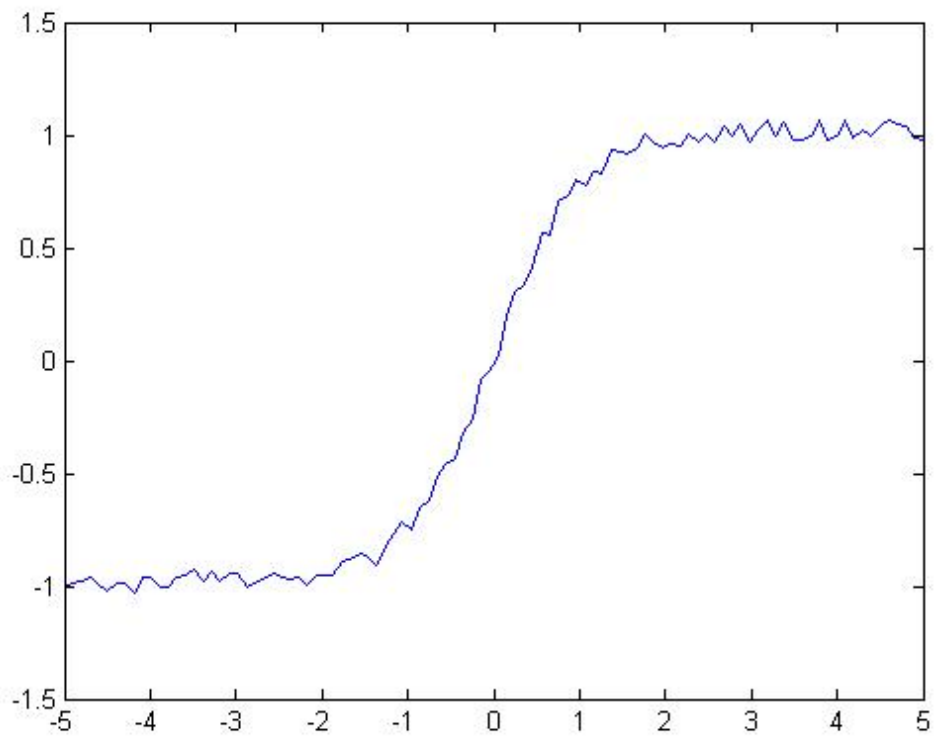
### 3(a)

```
>> x=linspace(-5,5); plot(x,tanh(x));
```



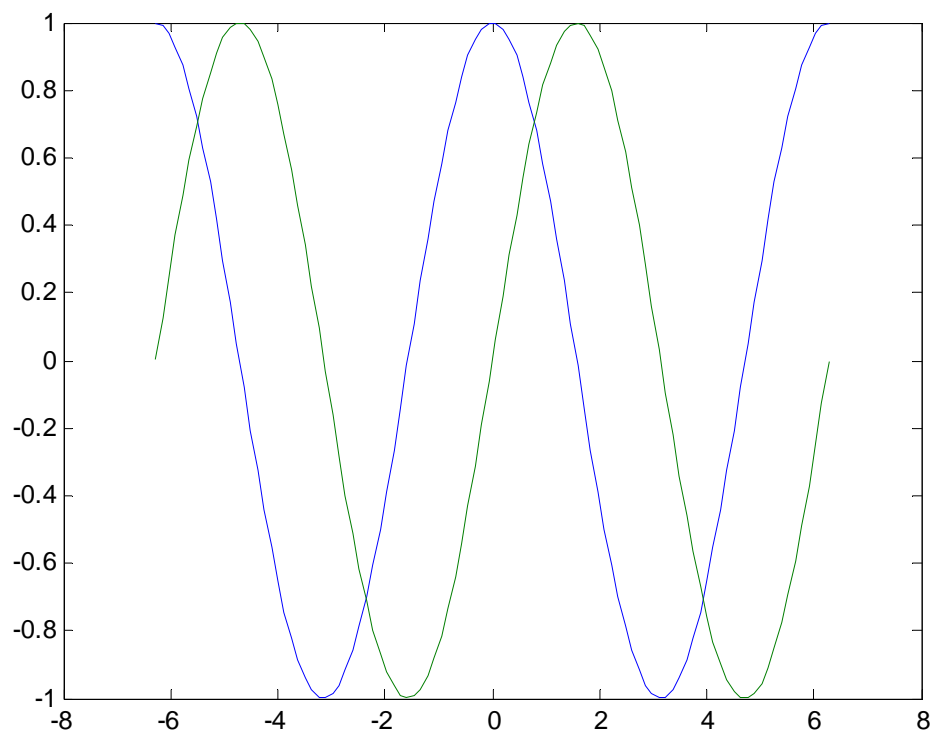
### 3(b)

```
>> x=linspace(-5,5); n=length(x); plot(x,tanh(x)+(rand(1,n)-0.3)*0.1);
```



**3(c)**

```
>> x=linspace(-2*pi,2*pi);  
plot(x,cos(x),x,sin(x));
```



**3(d)**

```
>> x=linspace(-2*pi,2*pi);
```

```
>> subplot(2,1,1);plot(x,cos(x));subplot(2,1,2);plot(x,sin(x));
```

