**7.SVM Code**

clear all;

close all;

clc;

p\_lbl=[ 3 1;3 -1;6 1;6 -1];

x=[3 3 6 6]

y=[1 -1 1 -1]

plot(x,y,'\*r')

axis([-2 8 -2 8])

hold on;

x1=[1 0 0 -1]

y1=[0 1 -1 0]

plot(x1,y1,'\*b')

axis([-2 8 -2 8])

hold on;

n\_lbl=[ 1 0;0 1;0 -1;-1 0];

%plot(p\_lbl,'\*b',n\_lbl,'\*r')

s1=[1 0];

s2=[3 1];

s3=[3 -1];

s1tilde=[1 0 1];

s2tilde=[3 1 1];

s3tilde=[3 -1 1];

a11=s1tilde.\*s1tilde;

ans11=sum(sum(a11));

a12=s1tilde.\*s2tilde;

ans12=sum(sum(a12));

a13=s1tilde.\*s3tilde;

ans13=sum(sum(a13));

%completed for first equation

a21=s2tilde.\*s1tilde;

ans21=sum(sum(a21));

a22=s2tilde.\*s2tilde;

ans22=sum(sum(a22));

a23=s2tilde.\*s3tilde;

ans23=sum(sum(a23));

%completed for second equation

a31=s3tilde.\*s1tilde;

ans31=sum(sum(a31));

a32=s3tilde.\*s2tilde;

ans32=sum(sum(a32));

a33=s3tilde.\*s3tilde;

ans33=sum(sum(a33));

%For calculating values of alpha

A=[ans11 ans12 ans13;ans21 ans22 ans23;ans31 ans32 ans33]

B=[-1;1;1]

sol=linsolve(A,B)

%For calculating weights

w=sol(1)\*s1tilde+sol(2)\*s2tilde+sol(3)\*s3tilde

s11=((-1\*w(2))+(-1\*w(3))/w(1))

s22=0

plot([s11 s11],[-2 8]);

hold off;

OUTPUT:

x =

3 3 6 6

y =

1 -1 1 -1

x1 =

1 0 0 -1

y1 =

0 1 -1 0

A =

2 4 4

4 11 9

4 9 11

B =

-1

1

1

sol =

-3.5000

0.7500

0.7500

w =

1 0 -2

s11 =

2

s22 =

0

>>

