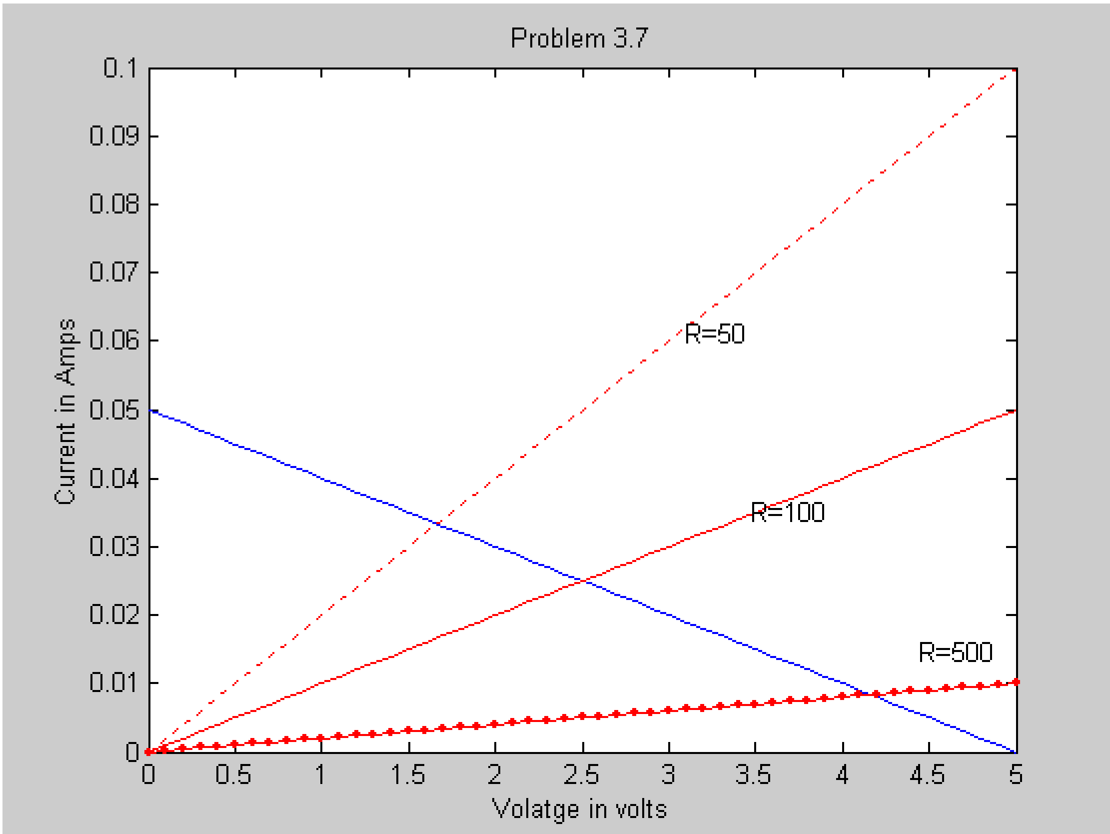
Pb3.7

Code:

```
%Pb.3.7
%to use the MyAffine.m to solve this problem we should represent a, b as functions of
%Vs , R1, R (refer to equations 3.4 & 3.5)
%in this case we have for L1: a=-1/R1 and b=Vs/R1
%for L2: a=1/R and b=0;
%in the part 3.7-a we just need to call the function twice and plot both lines on the same
%graph for R=100 Ohms, R1=100 Ohms, and %Vs=5V.

clear all;
%call the function and plotting the 2 lines.

R1=100;
R=100;
Vs=5;
V=[0:0.1:5]; % represents the voltage which should be between zero and Vs;
I1=MyAffine(-1/R1,Vs/R1,V); %calculate I1 for equation 3.4
I2=MyAffine(1/R,0,V); %calculate I2 for equation 3.5

plot(V,I1,'b',V,I2,'r');
xlabel('Volatge in volts')
ylabel('Current in Amps')
gtext('R=100')

hold on ; % to hold the graph and plot on top of the lines
%change the value of R
R=50;
%call the function again using the new value of R, note that only L2 changes
I2=MyAffine(1/R,0,V); %calculate I2 for equation 3.5
plot(V,I2,'r:');
gtext('R=50')

%change the value of R
R=500;
%call the function again using the new value of R, note that only L2 changes
I2=MyAffine(1/R,0,V); %calculate I2 for equation 3.5
plot(V,I2,'r.-');
gtext('R=500')
title('Problem 3.7');
```

Graph:



As we see from the graph when R goes to infinity the values of V and I will become V=5V and I=0 amps.
And when R=0, V=0 and I=0.05 Amps
%%%

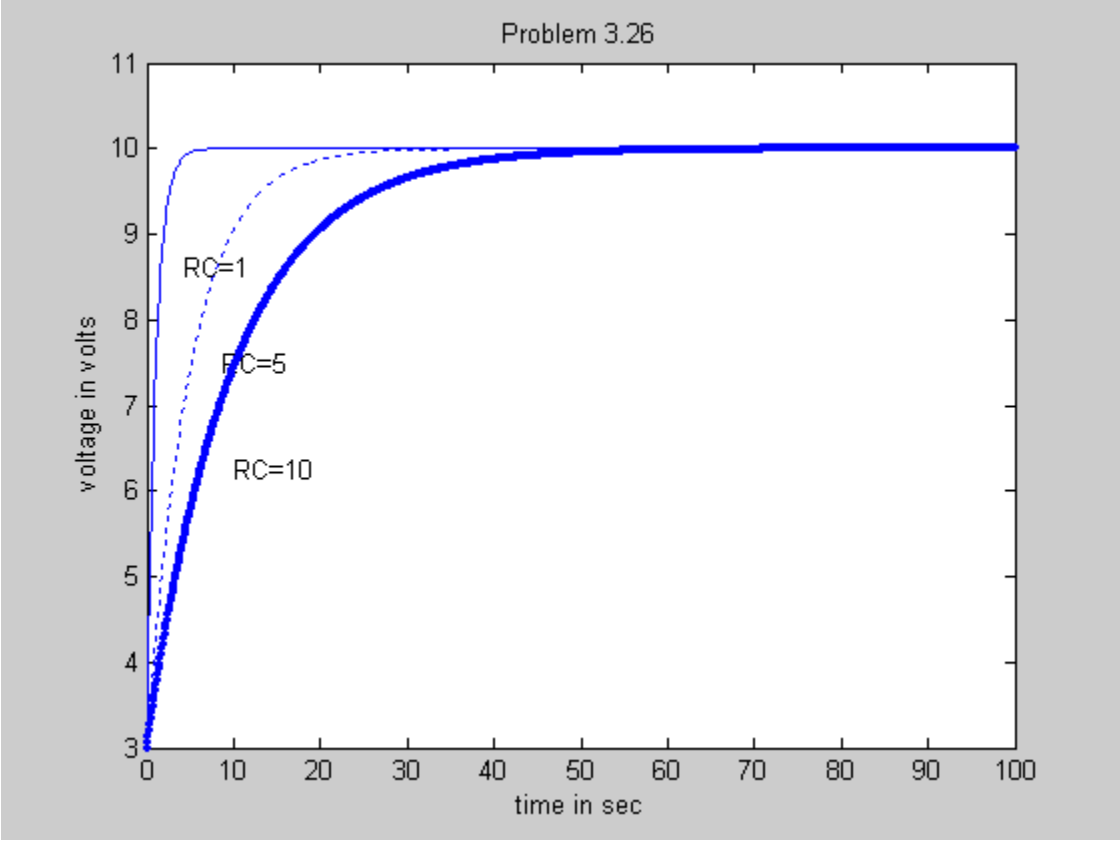
Pb.3.26

Code:

```
%this is to solve problem 3.26;
clear all;
Vc0=3;
Vs=10;
RC=1;
t=0:0.1:100; %time interval
Vc=Vc0.*exp(-t./RC)+Vs.*(1-exp(-t./RC)); %voltage
plot(t,Vc,'b');
gtext('RC=1')
```

```
hold on;
%change the values of RC and recalcutate the voltage and plot it
RC=5;
Vc=Vc0.*exp(-t./RC)+Vs.*(1-exp(-t./RC));
plot(t,Vc,'b:');
gtext('RC=5')
%change the values of RC and recalcutate the voltage and plot it
RC=10;
Vc=Vc0.*exp(-t./RC)+Vs.*(1-exp(-t./RC));
plot(t,Vc,'b.-');
gtext('RC=10')
axis([0 100 3 11])
title('Problem 3.26')
xlabel('time in sec')
ylabel('voltage in volts')
```

Graphs:



When we repeat the problem with Vc=0 we get the discharging behavior of the capacitor. When Vc0=Vs Vc remains constant (the capacitor will neither charge or discharge)